



**AALBORG UNIVERSITY**  
DENMARK

DELIVERY in Erasmus+ project Solution by Inclusion

INTELLECTUAL OUTPUT 3: Measuring students' mental well-being and social inclusion (W.P.3.7): A comparative study of the baseline results

Delivered by project partner: CaBE, Aalborg University



Co-funded by the  
Erasmus+ Programme  
of the European Union



**Solution By Inclusion**



**DEPARTMENT OF  
CULTURE AND LEARNING**

**AALBORG  
UNIVERSITY**

Hanne Kathrine Krogstrup, Martin Brygger Andersen og Leonora Hedegaard

01-07-2022

## Table of contents

<b>1. BASELINE REPORT ON STUDENTS' WELL-BEING AND INCLUSION .....</b>	<b>1</b>
1.1. READING GUIDE .....	2
<b>2. METHOD .....</b>	<b>3</b>
2.1. DATA .....	3
2.2. BACKGROUND VARIABLES .....	4
2.3. SCHOOL-SPECIFIC VARIABLES .....	5
2.4. RESCALING AND REVERSING ITEMS .....	6
2.5. INCREASING VALIDITY AND RELIABILITY .....	7
<b>3. ANALYSIS .....</b>	<b>11</b>
3.1. SIX DIMENSIONS OF WELL-BEING AND INCLUSION .....	11
<i>Standardised effects</i> .....	15
3.2. BACKGROUND FACTORS .....	17
<i>Gender, age, and emotional well-being</i> .....	17
<i>The physical study environment</i> .....	18
<i>Family situation</i> .....	22
3.3. SCHOOL-SPECIFIC BACKGROUND FACTORS .....	25
<i>Apprenticeship agreement</i> .....	25
<i>Year of attendance</i> .....	27
<i>Field of study and subjects submitted to</i> .....	29
<b>4. CONCLUSION .....</b>	<b>34</b>
<b>REFERENCES .....</b>	<b>37</b>
APPENDIX A .....	39
APPENDIX B .....	40

## List of tables

Table 1. Survey responses (complete, partial, and missing data)	p. 3
Table 2. School-specific variables/questions in the questionnaire	p. 6
Table 3. CA on the physical study environment, well-being, and inclusion	p. 18
Table 4. Crosstabulation of physical study environment by school	p. 21
Table 5. Whom the student lives with or have lived with most of life	p. 22
Table 6. Which options are you enrolled to? (GEM16+)	p. 29
Table 7. Which overall field of study are you submitted to? (Tadium)	p. 30
Table 8. Which overall field of study are you submitted to? (IAL FVG)	p. 31
Table 9. Validity and reliability statistics of the six dimensions	p. 39
Table 10. Multiple comparisons (Univariate ANOVAs)	p. 40

## List of figures

Figure 1. Categorisation of background variables	p. 4
Figure 2. Conceptual model of the six dimensions of well-being and inclusion	p. 8
Figure 3. Radar chart on six dimensions of well-being and inclusion	p. 12
Figure 4. Standardised effects	p. 15
Figure 5. Emotional Well-Being by gender	p. 17
Figure 6. The physical study environment by school	p. 20
Figure 7. Family constellations and the six dimensions of well-being and inclusion	p. 24
Figure 8. Do you have an apprenticeship agreement?	p. 26
Figure 9. Which year are you attending? (Tradium)	p. 27
Figure 10. Which year are you attending? (IAL FVG)	p. 28
Figure 11. Well-being and inclusion by subject field (GEM16+)	p. 30
Figure 12. Well-being and inclusion by overall field of study (IAL FVG)	p. 32
Figure 13. Well-being and inclusion by overall field of study (Tradium)	p. 33

# 1. BASELINE REPORT ON STUDENTS' WELL-BEING AND INCLUSION

This report constitutes project partner CaBE's (at Aalborg University) delivery on **Intellectual Output 3 (IO3)** in the Erasmus+ project "Solution by Inclusion: Development of Digital, Innovative, Prevention & Intervention Solutions to Strengthen Social Inclusion, Well-Being, and Combat Early School Leaving in Vocational and Educational Training (VET) and Second Chance Learning (SCL) Schools".

This report constitutes the third work package (**W.P.3.7**) of **IO3**, which contains the baseline results on students' mental well-being and social inclusion at all partnering VET and SCL schools, specifically GEM16+, Tradium, and IAL FVG localised in Malta, Denmark, and Italy, respectively.

As previously described in **IO3** (Krogstrup et al., 2021a), the Solution by Inclusion project aims to reduce dropout rates (by 20%) among students at the upper secondary level in VET/SCL schools by enhancing social inclusion and mental well-being among students. This report contributes to this overall aim by presenting and analysing key patterns in relation to four dimensions of mental well-being and two dimensions of social inclusion taking several background variables into account. Thus, a main purpose of this report is to discover differences/similarities between the partnering VET/SCL schools and assess the generalisability of the results.

The four dimensions of mental well-being and two dimensions of inclusion, which represent the core outcomes of the statistical analysis in this report, are:

1. Emotional Well-Being
2. Management of Everyday Life
3. Social Life
4. School Burnout
5. Social Inclusion into the Learning Community
6. Social Inclusion into the Social Community

The data for this baseline report were gathered using the *Finalized questionnaire* (CaBE, 2021), which was developed by CaBE based on a systematic literature review and a co-creation process involving students from peer advisory boards at the three partnering schools (Krogstrup et al., 2021a). The overall purpose of the literature review and the conducted interviews was to identify key dimensions of mental well-being and inclusion based on a combination of theory and students' expertise in their own lives (Krogstrup et al., 2021a, Krogstrup et al., 2021b).

The data were gathered at the three partnering schools with the final questionnaire. Here, the students answered questions on six (experienced) dimensions of mental

well-being and social inclusion measured with several questions each, which is ideal for complex and multifaceted constructs (de Vaus, 2014).

In this report, the baseline results are analysed descriptively and inferentially. Several background variables are considered to ensure that the identified patterns are not biased by any confounding variables. Thus, the purpose of this baseline report is to analyse the baseline results from each partnering school and compare them to each other to reveal key patterns. This is important to improve each school's knowledge and evaluation capacity in relation to the students' subjective mental well-being and sense of social inclusion.

By providing knowledge into general patterns of inclusion and well-being across the three partnering schools, this report also points to possible underlying variables or mechanisms that may increase well-being and inclusion in VET/SCL schools in general. The findings are put into perspective by comparing them with highlighted main results from the systematic literature review (Krogstrup et al., 2021b).

## **1.1. READING GUIDE**

This report is structured as following:

First, the method is explained where the data are clarified in terms of response rate, missing values, and characteristics of the study's core variables. Since this report concerns complex socio-psychological constructs of mental well-being and social inclusion, which have been described and defined in the systematic literature review (Krogstrup et al., 2021b), it is also explained how validity and reliability (both conceptual and statistical) have been ensured during the research process.

Second, the statistical results are presented and briefly discussed in an analysis divided into three main sections where the first presents radar charts on the six dimensions of mental well-being and social inclusion, whereas the second part concerns possible confounders, specifically the following background variables: gender, age, physical study environment, and the students' family situation/constellation. In the third main section, school-specific variables are analysed using radar charts to depict grouped patterns of different student categories.

Finally, the results are summarised in the conclusion, where basic suggestions and practical implications are highlighted. The reader may skip directly to the main parts of the analysis or directly to the conclusion to attain an overview of the main findings. For further understanding of the research process and methodological approach (e.g. variable coding), the reader may consult the method section (incl. Appendix A about validity/reliability of the factors/indices).

During the analysis, the results are discussed and reflected upon (incl. encountered limitations and interpretational complexities/uncertainties). Both theory and previous research are introduced ad hoc during the analysis and discussion, but this report primarily focuses on the empirical results and interpretations thereof.

This report aims at a high level of transparency to allow for comparisons with other studies (incl. the 2. round of survey data from the Solution by Inclusion project due to arrive in early January 2023). Thus, all essential statistical measures are reported either in the text, in notes of figures and tables, or in footnotes.

## 2. METHOD

In the following, the dataset is described, and the methodological approach is explained. Initially, the data were prepared with the online tool SurveyXact and later managed in the program SPSS v. 28, which was used to complete the statistical analysis. All data visualisations were conducted in Excel/Word.

### 2.1. DATA

The survey data were collected at random from the three partnering schools to ensure a representative sample. Below, some core information is presented regarding responses and missing cases to assess the quality of the collected data.

**Table 1.** Survey responses (complete, partial, and missing data)

	<b>GEM16+</b>	<b>Tradium</b>	<b>IAL FVG</b>
Complete cases <sup>a</sup>	55 (86%)	546 (90%)	103 (91%)
Partial cases <sup>b</sup>	4 (6%)	43 (7%)	4 (4%)
Completely missing <sup>c</sup>	5 (8%)	16 (3%)	6 (5%)
<b>Total responses (n)</b>	<b>59 (92%)</b>	<b>589 (97%)</b>	<b>107 (95%)</b>
<b>Ratio sample/school</b>	<b>59/138 = 0.43</b>	<b>589/845 = 0.70</b>	<b>107/1631 = 0.07</b>

*Note.* <sup>a</sup> The percentage of responses where all questions were answered. <sup>b</sup> The percentage of responses where students only partially answered the questionnaire. <sup>c</sup> the percentage of cases where students handed in an entirely blank questionnaire.

*N* = 755 (*n* for each school combined).

As Table 1 shows, the number of complete cases was satisfactory on all partnering schools (86–91%), which increased the ability to generalise from the data as construct-level missingness was no concern (each construct comprised several questions, which is why missing data across entire constructs could potentially damage the study's validity). The percentage of total cases (complete plus partial) was very

good or even excellent (92–97%) as completely missing cases below 5–10 percent are generally considered less problematic (Hair et al., 2019).

However, the ratio sample/school (the sample size compared to the school size) varied greatly across the three schools (7–70%), which is why Tradium’s sample is considered the most representative. The small samples from IAL FVG and GEM16+ limited the statistical options and interpretations. Still, assuming the data were collected at random (not by convenience), even a small sample can provide valid estimates of population parameters (Agresti et al., 2018), which is why this report contains both descriptive and inferential elements in the analysis.

## 2.2. BACKGROUND VARIABLES

Information was collected on various background variables connected to (1) individual factors, (2) sociodemographic factors, (3) school-related factors, and (4) family factors. The specific variables contained in these four categories are briefly described below, including how they were applied in the quantitative analysis.

Previous studies have found that socio-demographic factors affect the association between mental ill-being, social inclusion, and school dropout. Moreover, school-related factors, and family factors are typically considered very influential variables in existing research on well-being and school dropout (Krogstrup et al., 2021b)

Individual factors were added since research has suggested that mental well-being and dropout risk varies by gender (Krogstrup et al., 2021b).

**Figure 1.** Categorisation of background variables



Source: Krogstrup et al. (2021b).

**Individual factors:** Data were gathered on students’ gender, age, and ethnicity.



In relation to gender, the category 'other' was omitted because only seven students identified with being non-binary. Two cases were omitted from the age variable to reduce the impact of highly influential cases that could produce bias.<sup>1</sup> The variable ethnicity was excluded from the analysis because most students reported being native born while a few reported being foreign born (inside or outside of EU).<sup>2</sup> Thus, insufficient information was gathered on ethnicity to validly apply this variable to test for possible confounders since the samples were too small (see Table 1).

**Sociodemographic factors:** A relatively large number of missing values on parents' level of education' was registered because many students had answered 'I don't know'.<sup>3</sup> Hence, that specific category was omitted from this variable. The large number of missing values diminished the variable's validity. However, it was included as a control to explore possible effects of the parents' educational level.

**School-related factors:** Apprenticeship agreements varied across the three schools, which is why this variable was unfeasible to employ in a comparative analysis. The variable on the physical study environment (e.g., indoor climate, noise, comfortable furniture in the classroom and other learning environments, etc.) was employed in relation to the six dimensions of well-being and inclusion.

**Family factors:** Data were gathered on family constellations where students had the option to select who they currently live with or have lived with most of their lives. Here, the students could select one or more of the following options: mother, father, parents, spouses/partners, others (e.g. grandparents or relatives), and children's home or foster home. However, due to low response rates on most categories, four main groups were included in the analysis for all schools combined to determine whether family constellation had any significant impact on inclusion and mental well-being of students overall and/or in relation to specific dimensions.

## 2.3. SCHOOL-SPECIFIC VARIABLES

In the following, the school-specific variables are described, which are analysed in relation to the six dimensions of well-being and inclusion in Section 3.3.

---

<sup>1</sup> Two students reported they were aged 47 and 52, and five students reported an age in the interval 2–12. These observations were not considered representative, which is why they were omitted from specific analyses that included the age variable.

<sup>2</sup> Percentage of native-born students: Tradium = 97%; GEM16+ 70%; IAL FVG; 93%.

<sup>3</sup> Specific percentages: Tradium = 24%; GEM16+ = 37%; IAL FVG = 8%.

**Table 2.** School-specific variables/questions in the questionnaire

Variable/question	GEM16+	Tra-dium	IAL FVG
s_6a: Which year are you attending? (1 <sup>st</sup> to 3 <sup>rd</sup> year)	x	✓	x
s_6b: Which overall field of study are you submitted to?	x	✓	x
s_6c: How many subjects are you currently enrolled to?	✓	x	x
s_6d: Which subject are you currently enrolled to? <sup>a</sup>	✓	x	x
s_6e: Which year are you attending? (1 <sup>st</sup> to 4 <sup>th</sup> year)	x	x	✓
s_6f: Which overall field of study are you submitted to? (e.g. receptionist, hairdresser, electrician ...) <sup>b</sup>	x	x	✓
s_7: Do you have an apprenticeship agreement?	✓	x	✓
s_22: Which options are you enrolled to? <sup>c</sup>	✓	✓	x

*Note.* A cross means that the specific question was not a part of the school's survey, whereas a tick means that the specific question was part of the school's survey.

<sup>a</sup> Multiple-choice item with five options: none, ECDL, physics, biology, other/type. <sup>b</sup> Respondents at IAL FVG could type the option manually. <sup>c</sup> All respondents could type the option manually.

Table 2 displays the school-specific variables of the questionnaire, which was administered at the three VET/SCL schools. All above variables are analysed descriptively in relation to well-being and inclusion in this report. However, some categories were excluded from the analysis due to a low number of responses.

## 2.4. RESCALING AND REVERSING ITEMS

Before developing the radar charts, all items measured on three or four categories were rescaled to fit a 5-point scale. The items were rescaled to ensure that all items carried equal weighting and importance on each measured construct.

To rescale the items the following formula was used:<sup>4</sup>

$$y = (B - A) \times (x - a) / (b - a) + A$$

A benefit of rescaling the items was that it enabled the opportunity to make cross-comparisons among the six dimensions of well-being and inclusion (dimensions that are conceptually related according to the conducted systematic review; Krogstrup et al., 2021b). Moreover, this made it easier to interpret the absolute values of well-being and inclusion since an average score above 3 on each dimension could be considered positive (see Figure 3; scores exceeding the fourth hexagon). A score

<sup>4</sup> A and B represent the new scale's bottom and top point while a and b represent the old scale's bottom and top point.

of 3 represents the midpoint of each dimension while a score above 3 for a specific group indicates that respondents, on average, have answered the construct's questions positively/above neutral.<sup>5</sup>

However, the caveat of this method was that the dispersion around the mean increased on the rescaled variables, which resulted in less statistical power to detect significant differences in inferential analyses (cf. Field, 2018). Still, it was possible to estimate levels of statistical significance in the comparative analysis by using bias-corrected multiple comparisons (see Appendix B for significance levels).

Besides rescaling into 5-point scales, items and factors were reversed, if needed, to ensure that all dimensions were measured unidirectionally (from low to high). Thus, high values on each dimension on the radar charts signify positive well-being or social inclusion, whereas low values signify the opposite.

## 2.5. INCREASING VALIDITY AND RELIABILITY

Before initiating the analysis, all reflective factors or indices were carefully examined with factor analysis (FA) and reliability analysis (see Appendix A for information on essential validity and reliability statistics).<sup>6</sup>

Although the items and measures for each dimension were derived from previous empirical studies and theoretically co-evaluated/validated in cooperation with students, it was necessary to statistically validate each dimension separately (Hair et al., 2019). For this reason, all constructs of well-being and inclusion were assessed using Cronbach's alpha ( $\alpha$ ) and FA (spec. principal axis factoring; PAF) to determine if any amendments were required before proceeding.<sup>7</sup>

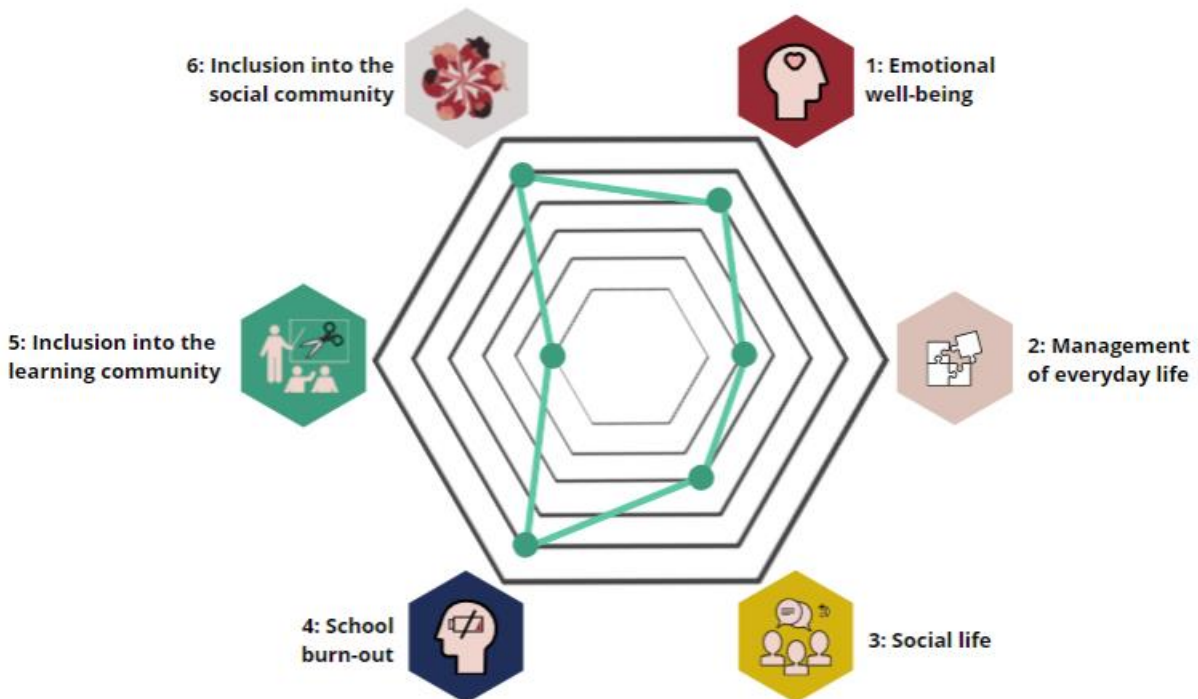
---

<sup>5</sup> For instance, if the original item were measured as [1 = low; 2 = neutral; 3 = high] then a rescaled version of this item would be [1 = low; 3 = neutral; 5 = high], which places 3 in the middle of this new 5-point scale as the neutral score.

<sup>6</sup> A reflective factors *reflects* an underlying phenomenon that is often fully or partly psychological, whereas a formative factor (i.e. an index) is a theoretical construct consisting of non-reflective items that are not assumed to be correlated (Hair et al., 2019).

<sup>7</sup> PAF was applied as this is generally considered the optimal approach for reflective factors, which are often mental/psychological of nature (Field, 2018).

**Figure 2.** Conceptual model of the six dimensions of well-being and inclusion



Source: Krogstrup et al., 2021a.

During this process, some core characteristics of the data were identified. These are explained for each dimension in the following subsections:

**Emotional Well-Being:** By conducting FA a highly valid and reliable (almost perfect) unidimensional factor was revealed in the data. This factor was originally measured on a 5-point scale, which is why no adaptations were required.

**Management of Everyday Life:** Using FA, this factor was considered acceptable in terms of reliability. The FA revealed two underlying and strongly correlated subdimensions; the first concerning the ability to focus, concentrate, and manage responsibilities of daily life, whereas the other concerned the ability to adapt to unexpected situations and quickly find solutions. Thus, this factor was considered reflective but multidimensional as it contained two subdimensions – which could be called (1) Self Discipline and Mental Focus, and (2) Problem Solution Skills. Thus, students scoring high on this factor could be regarded as skilled in these areas.

**Social Life:** The FA revealed two separate but weakly correlated subdimensions. The reliability was acceptable in terms of Cronbach's alpha. It could have been improved by separating the factor into two subdimensions: The first subdimension concerned empathy and the desire to volunteer and help others, whereas the second subdimension concerned the ability to talk with family members. Although a

separation of these dimensions was considered to increase reliability, separating them would have resulted in a less valid factor comprising only two items, which is often considered insufficient to measure complex constructs (Hair et al., 2019).

Furthermore, the FA suggested that Social Life should be interpreted as an index rather than a reflective factor. In this manner, it measures the students' social life in points based on external conditions, and it should thus not be assumed to reflect an underlying (mental/psychological) dimension of well-being.<sup>8</sup>

**School Burnout:** FA was conducted on all variables for this factor, and a single, unidimensional structure was uncovered, which pointed to the existence of a reflective factor. However, one item regarding the students' assessment of their educational and/or occupational future loaded in the reverse direction, which entirely invalidated the construct.<sup>9</sup> Apparently, many students found it too difficult to answer this hypothetical question about their future. Hence, this item was removed, which improved the factor's internal reliability and consistency (see Appendix A).

**Social Inclusion into the Learning Community:** FA was conducted, but initially validity and reliability was below average. Cronbach's alpha was below the standard threshold of 0.7 (Field, 2018), and the factor loading for item 18 on school liking was weak ( $\lambda = 0.48$ ; Hair et al., 2019).

It is debatable whether items 19a–19c (see CaBE, 2021) concern inclusion into the learning community or, more specifically, teacher support. For this reason, item 18 was removed, which resulted in a much-improved measure with an acceptable Cronbach's alpha value and a unidimensional structure in the FA with acceptable or strong factor loadings above 0.6 or close to 0.7 (see Appendix A).

**Social Inclusion into the Social Community:** The FA resulted in below average measures for validity and reliability. Specifically, variable 21 had a very weak factor loading ( $\lambda = 0.38$ ), indicating a low correlation with the construct's other items.<sup>10</sup> This implies that if a student spends time with other students during recess/break, it does not (causally) guarantee *experienced* inclusion. This makes theoretical sense since researchers distinguish between psychological inclusion and active participation as two distinct dimensions of inclusion (Qvortrup & Qvortrup, 2018).

---

<sup>8</sup> For instance, students who do not have a mother, father, or siblings will naturally score lower on this construct, which is why it should be considered an index. In this manner, this index provides a basic gauge of the students' social capital rather than their well-being as a psychological or mental construct.

<sup>9</sup> Item 17: "I feel that my educational and/or occupational future looks bright."

<sup>10</sup> Item 21: "How often do you hang out with other students during recess/break?" (See the finalised questionnaire; CaBE, 2021).

Hence, variable 21 was removed. Subsequently, item 18 on 'school liking' was added to this construct instead, which increased Cronbach's alpha from 0.65 to 0.7, reaching the standard threshold of 0.7 (de Vaus, 2014; Field, 2018).

It can be argued theoretically that school liking is connected to inclusion into the social community as it involves a social outcome rather than an academic. For instance, school liking is also part the factor Social Well-Being in the Danish Student Well-Being Questionnaire (DSWQ), which concerns the students' sense of belongingness in the school community, their sense of safety and security, and their subjective experience of discrimination and bullying behaviour (MCE, 2021).

It is also common to distinguish between social and academic dimensions/aspects of inclusion in education research (Messiou, 2012; Qvortrup & Qvortrup, 2018), which is another reason the item on school liking was transferred to this dimension instead as this was considered more in alignment with general theory on inclusion.

### **3. ANALYSIS**

The statistical analysis is divided into three main sections:

In Section 3.1., the six dimensions of well-being and inclusion are examined using a radar chart in a comparative analysis. Moreover, it is examined whether observed differences are statistically significant and thus generalisable. In the accompanying subsection, the standardised effects are assessed using the statistician Jacob Cohen's well-known measure: Cohen's  $d$  (Cohen, 1988). The purpose of this subsection is to provide objective (commonly agreed upon) measures of the observed differences so that these are not interpreted based on subjective criteria.

In Section 3.2., the background factors are examined (incl. gender, age, the physical study environment, and family constellations) in relation to the six dimensions of well-being and inclusion to determine whether these have any significant influence on the core outcomes of the analysis and thus possibly on dropout.

In Section 3.3., school-specific variations of well-being and inclusion are examined in greater detail using radar charts (divided into several subgroups).

#### **3.1. SIX DIMENSIONS OF WELL-BEING AND INCLUSION**

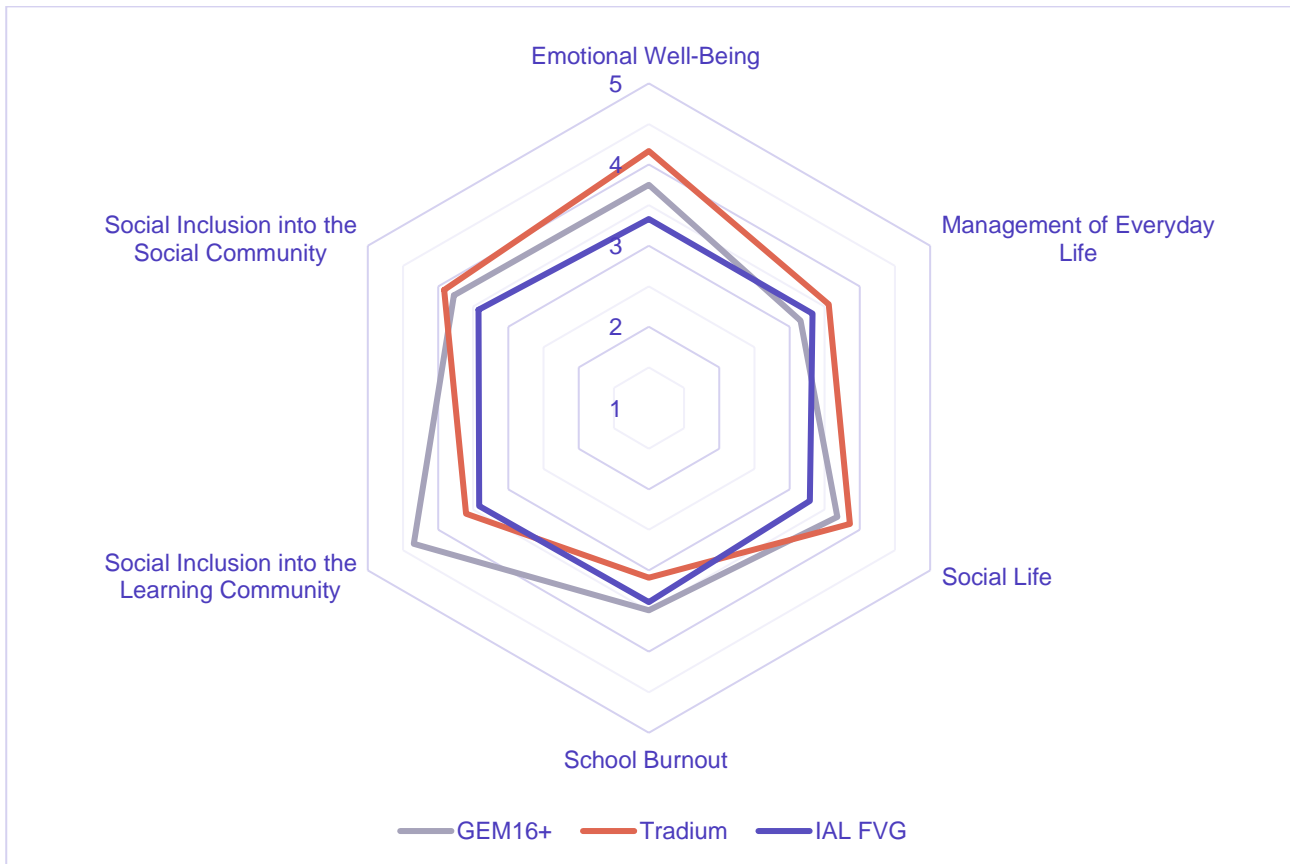
In this main section, the six dimensions of well-being and inclusion are examined by utilising a radar chart to depict different yet conceptually related dimensions.

The six dimensions of well-being and inclusion were identified in a systematic review. These include four dimensions of mental well-being: (1) Emotional Well-Being, (2) Management of Everyday Life, (3) Social Life, and (4) School Burnout; plus, two dimensions of inclusion: (5) Social inclusion into the Social Community, and (6) Social Inclusion into the Learning Community (Krogstrup et al., 2021b).

Besides being validated as part of previous empirical research (e.g. Management of Everyday Life was derived from the well-known and widely validated Strength and Difficulties Questionnaire; SDQ; see Krogstrup et al. 2021b), all six dimensions were assessed by involving students in a creative co-creation process with the aim of highlighting questions of special importance to the students before the final questionnaire was administered in the schools (Krogstrup et al., 2021a).



**Figure 3.** Radar chart on six dimensions of well-being and inclusion



*Note.* The larger the area the radar chart covers, the more positive the result. The factor School Burnout has been reversed so that a high score is positive, indicating a low degree of burnout.

Figure 3 shows the mean score ( $M$ ) on six dimensions of well-being and inclusion on scales (1–5) for each of the partnering schools. It is important to note that a mean score above 3 is mathematically positive in absolute terms, which should be kept in mind when interpreting these “raw” (i.e. unstandardised) results (see Section 2.4.). Thus, if one school scores lower than another it is not necessarily negative as this also depends on the absolute scores.

On Emotional Well-Being, Tradium ( $M = 4.17$ ) had the highest score while GEM16+ ( $M = 3.75$ ) and IAL FVG ( $M = 3.33$ ) had lower scores. Thus, all schools had positive scores in absolute terms, which suggests that the students, in general, experience a positive degree of happiness, life satisfaction, and meaning in life regarding its sense of direction. Moreover, the students are mostly happy with various aspects/parts of their personality and feel confident in thinking and expressing personal ideas and opinions. However, fewer students responded positively in relation to this construct at GEM16+ and IAL FVG compared to Tradium, which implies that more could be done to improve their emotional well-being. All comparisons were statistically significant, suggesting that the sampled school differences actually reflect population differences with a high degree of certainty (see Appendix B).



In relation to Management of Everyday Life, the scores were quite similar. Tradium ( $M = 3.56$ ) had the highest score, whereas IAL FVG ( $M = 3.33$ ) scored second highest while GEM16+ ( $M = 3.16$ ) scored lowest, barely reaching a score above 3. This indicates that most students have an average ability to manage responsibilities of everyday life, focus/concentrate (on tasks), finish their work and be attentive, and keep a good balance between schoolwork and spare time. Although the observed school differences were quite small, they were statistically significant, except between IAL FVG and GEM16+ ( $p > 0.05$ ). This implies that students at Tradium are better at handling everyday life compared to students at GEM16+ and IAL FVG.

Regarding Social Life, a similar pattern emerged. Tradium ( $M = 3.86$ ) had the highest score, whereas GEM16+ ( $M = 3.68$ ) and IAL FVG ( $M = 3.29$ ) scored lower. Again, all scores were positive (above the scale's mathematical midpoint = 3), which implies that most students experience a positive social life in which they are compassionate and empathetic (report that they care about others' feelings and that they often volunteer to help others: e.g. parents, friends, children, and teachers), find it easy to talk to close friends about things that bothers them, and find it easy to talk to family and relatives (e.g. their mother, father, siblings, or other family members). Nonetheless, there is apparently room for improvement when comparing the schools, particularly at IAL FVG, although their absolute score was still positive.

On Social Life, all differences between GEM16+ and Tradium as well as between Tradium and IAL FVG were statistically significant, indicating that students at Tradium rate their social life higher compared to students at the other schools. Why this discrepancy occurs is not evident from the data, but the possible causes for these patterns could be explored further (e.g. with qualitative methods, which can be utilised to attain a deeper understanding of social processes; Bryman, 2021).

The factor School Burnout revealed an unexpected result by contrasting the consistent pattern of the previous factors. Tradium scored lowest ( $M = 3.09$ ), whereas IAL FVG ( $M = 3.39$ ) and GEM16+ ( $M = 3.49$ ) scored highest. This suggests that students at Tradium experience greater levels of burnout compared to students at GEM16+ and IAL FVG, which implies that they more often feel overwhelmed by schoolwork, lack motivation, think about giving up, find their schoolwork uninteresting, and more often have debilitating feelings of lack or inadequacy. This result is fairly surprising given that students from Tradium also experienced the highest degree of emotional well-being. Although the scores from all schools were above the dimension's midpoint ( $M > 3$ ), this finding suggests that more should be done to reduce stress and burnout among students, especially at Tradium.

For School Burnout it was also examined whether the observed differences were statistically significant. Significant differences were revealed between GEM16+ and

Tradium, and between Tradium and IAL FVG. These results suggest that students at Tradium are more likely to experience higher levels of burnout.

On Social Inclusion into the Learning Community, the pattern differed from the previous. GEM16+ ( $M = 4.35$ ) scored highest followed by Tradium ( $M = 3.94$ ) and IAL FVG ( $M = 3.45$ ). Although all schools had an average score above 3, GEM16+ had an exceptionally high score above 4. These results imply that most students experience a positive degree of teacher support (measured as an aspect of the learning community). Note that the item on school liking was excluded from this factor (see Section 2.5) as this was deemed a social outcome not conceptually belonging to the learning community (cf. CaBE, 2021; the final questionnaire).

In relation to Social Inclusion into the Learning Community, students at GEM16+ experienced significantly more inclusion compared to students at IAL FVG and Tradium; these differences were highly significant ( $p < 0.001$ ). No statistical difference was confirmed between IAL FVG and Tradium on this dimension. It is surprising that students at GEM16+ are much more likely to experience stronger inclusion into the learning community. However, although this result was significant, it must be emphasised that the sample for GEM16+ was small and had fewer complete cases (see Table 1). Hence, this result should be interpreted with caution.

In relation to Social Inclusion into the Social Community, Tradium ( $M = 3.91$ ) had the highest score while GEM16+ ( $M = 3.77$ ) and IAL FVG ( $M = 3.42$ ) scored lower, but still above average in absolute values as all scores were above 3. This implies that most students at the three VET/SCL schools experience a positive degree of inclusion into the social community, which, as measured, specifically means that they find it easy to talk to friends in school about difficult matters, and that they mostly enjoy hanging out with other students during recess/break. In addition, included students mostly feel they belong in school and that their peers accept them as they are (cf. the finalised questionnaire, W.P.3.6). Although the overall level of social inclusion was positive, the school differences are nevertheless noteworthy. In addition, the mean scores below 4 indicate that improvements are possible.

For Social Inclusion into the Social Community, a significant difference was confirmed between Tradium and IAL FVG as well as between GEM16+ and IAL FVG. This implies that students at GEM16+ experience higher degrees of inclusion into the learning community compared to students from Tradium and IAL FVG, whereas no significant difference was evident between Tradium and GEM16+.

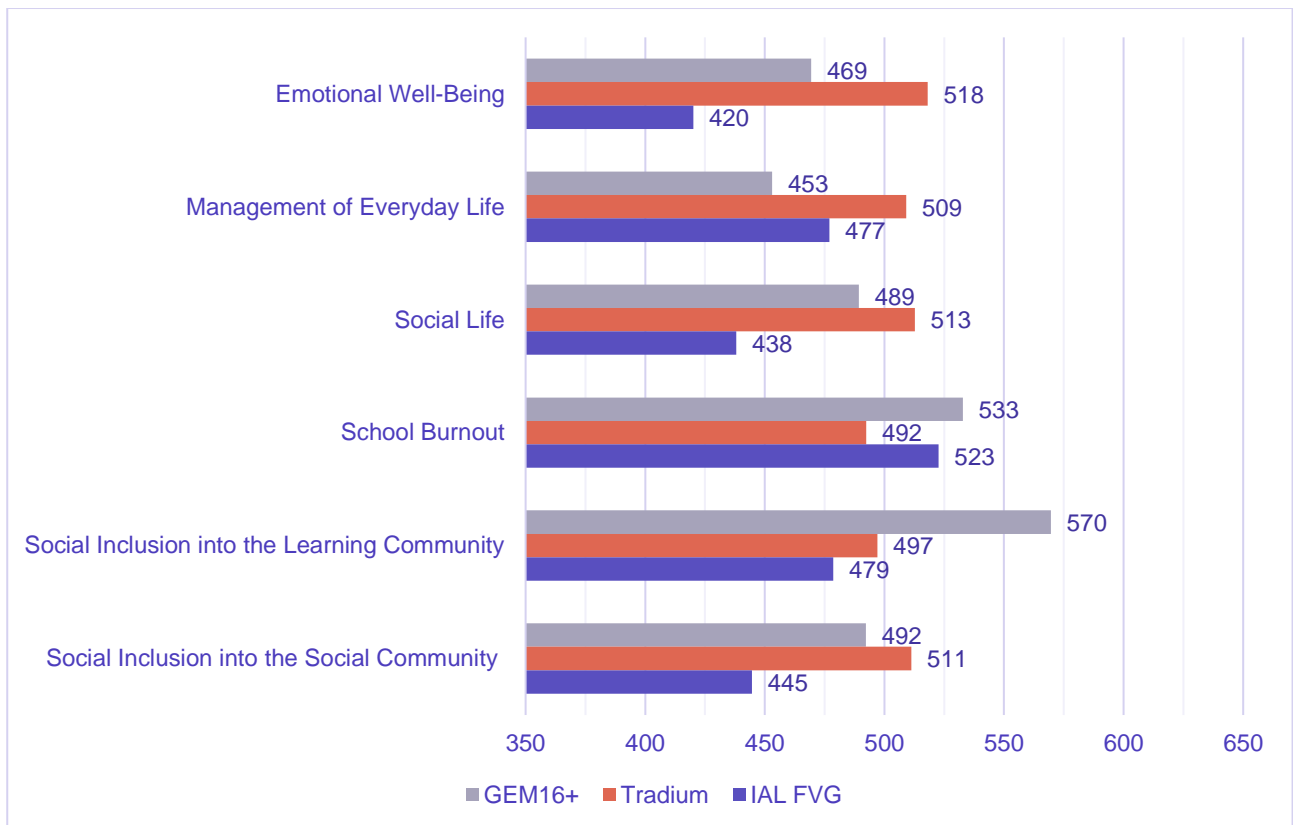
In the following subsection, the sizes of the observed differences are assessed using standardised measures to avoid arbitrary interpretations.

## STANDARDISED EFFECTS

In this subsection, the standardised effects are assessed on each dimension of well-being and inclusion using Cohen's *d* (Cohen, 1988).<sup>11</sup> John Hattie's (2009) interpretation of Cohen's *d* in educational contexts is applied.<sup>12</sup>

The purpose is to objectively assess the size of the observed differences between the three schools on the six dimensions of well-being and inclusion.

**Figure 4.** Standardised effects



*Note.* To calculate the standardised effect/difference on each factor/index, Cohen's *d* was used (Cohen, 1988) All means were compared to the grand mean set at 500. School Burnout was reversed so that a higher score indicated a low degree of burnout.

<sup>11</sup> Cohen's *d* is a standardised measure of effect size (i.e. difference) between two group means. The standard formula is  $d = (M_1 - M_2)/s$  (Cohen, 1988). The pooled standard deviation was used as there was no control group in this baseline study (cf. Field, 2018).

<sup>12</sup> Hattie (2009) suggested that differences measured with Cohen's *d* in educational contexts should be interpreted as follows:  $\pm 0.2$  = small;  $\pm 0.4$  = medium;  $\pm 0.6$  = large. This is equal to 20, 40, and 60 points, respectively, on Figure 4.

Figure 4 displays the mean differences between the three schools measured using Cohen's *d*. In the following, the depicted differences are interpreted as small, medium, or large (only significant differences are highlighted in the following analysis: See Appendix B for details on specific *p*-values).

As shown in the top of Figure 4, Tradium's score on Emotional Well-Being was 57 points higher than GEM16+ and 98 points higher than IAL FVG. This suggests a moderate to large difference on perceived emotional well-being for students at Tradium compared to students at GEM16+ and IAL FVG. In addition, students at GEM16+ experienced lower emotional well-being to a small extent compared to the grand mean (31 points below the grand mean of 500 points).

For Management in Everyday Life, the difference between Tradium and GEM16+ was largest. Tradium scored moderately higher score on everyday life management compared to GEM16+ (56 points). Compared to IAL FVG, students at Tradium reported slightly higher skills in everyday life management (32 points).

In relation to the index in Social Life, there was a large difference between Tradium and IAL FVG (65 points). The difference between GEM16+ and Tradium was small (24 points) and non-significant.

School Burnout was highest at Tradium (which was theoretically unexpected as they scored highest on Emotional Well-Being). Compared to GEM16+ (41 points) and IAL FVG (31 points), the mean differences were small, yet close to moderate. Students at IAL FVG and GEM16+ reported an equal degree of school burnout.

Social Inclusion into the Learning Community was substantially stronger at GEM16+ compared to both Tradium (73 points) and IAL FVG (91 points). These were among the largest observed (and statistically significant) differences in the data.

Social Inclusion into the Social Community was highest at Tradium, but at a similar level at GEM16+. IAL FVG scored significantly lower than both GEM16+ (47 points) and Tradium (66 points). These differences were moderate to large.

In summary, IAL FVG scored lower, especially on emotional well-being, social life, and social inclusion into the learning community (moderate to large differences). Tradium scored highest among the three schools on four dimensions and average on social inclusion into the learning community. Tradium's students reported higher levels of burnout (i.e. a lower score) to a small extent. GEM16+ was placed around average on most dimensions; they scored slightly better on burnout and had an almost perfect score on social inclusion into the learning community.

### 3.2. BACKGROUND FACTORS

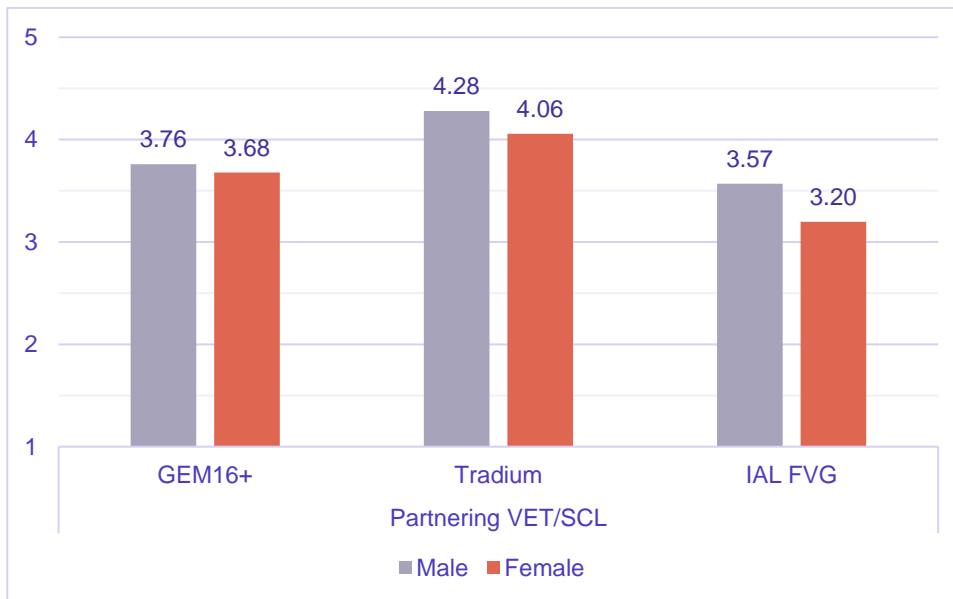
In this second main section of the analysis, the influence of background factors is assessed in relation to students' sense of well-being and inclusion.

#### GENDER, AGE, AND EMOTIONAL WELL-BEING

To investigate whether gender influenced the dimensions of well-being and inclusion, a complex factorial model was formed, specifically a MANCOVA (multivariate analysis of covariance), which examines the explanatory variables including a covariate in relation to several linearly combined outcomes assumed to be theoretically related (Field, 2018).

In this factorial model, the following background variables were employed to test for possible confounding variables: gender and age (other background factors were initially included, specifically ethnicity and parents' educational level, but these resulted in invalid and too small groups that ultimately biased the model).

**Figure 5.** Emotional Well-Being by gender



*Note.* MANCOVA was conducted with the age variable as a covariate.<sup>13</sup> Gender did not have any significant overall impact on the six dimensions of well-being and inclusion. However, a difference was found between males and females at Tradium (95% CI).

Figure 5 depicts the mean score of emotional well-being for the three partnering

<sup>13</sup> Age was centered at  $M = 17.28$ .

VET/SCL schools. This bar chart indicates that girls have lower emotional well-being than boys at Tradium and at IAL FVG. However, the statistical test showed that no gender difference was present at IAL FVG or GEM16+, only at Tradium. Hence, it is plausible that this gender difference is context specific or cultural. However, at Tradium, girls ( $M = 4.06$ ) scored a bit lower than boys ( $M = 4.28$ ), but still above the grand mean ( $M = 4.02$ ), which is why this relative difference should not be overinterpreted or exaggerated.

Nonetheless, gender is seemingly an important background factor in relation to emotional well-being and related dimensions. Research in lower secondary education in Danish public schools has found that girls (grades 4–10; ages 10–16) typically experience more social marginalisation and lower social well-being than boys (Andersen, 2021; Jensen et al., 2020). The Danish Student Well-Being Questionnaire (DSWQ), which is the most comprehensive survey on well-being in Denmark, as it involves all public schools, has also consistently shown that girls score lower on social well-being compared to boys (MCE, 2022).

In a study based on data from the Health Behavior in School-Aged Children (HBSC), which was conducted in Denmark, Finland, Iceland, and Sweden ( $N = 5,883$ ) in 2018, Lyyra et al. (2021) found that girls generally score higher on loneliness, whereas boys typically score higher on positive mental well-being indicators. Similarly, Parviainen et al. (2020) found that females in VET were prone to higher levels of depression than males, suggesting that problem is also present in VET schools.

## THE PHYSICAL STUDY ENVIRONMENT

In this part of the analysis, the importance of the physical study environment is assessed. For this purpose, a correlational analysis (CA) was conducted to assess the association between the physical environment and each dimension of well-being and inclusion.

**Table 3.** CA on the physical study environment, well-being, and inclusion

	Dim. 1	Dim. 2	Dim. 3	Dim. 4	Dim. 5	Dim. 6
<b>GEM16+:</b> PSE	0.361**	0.505**	0.303*	0.345**	0.297*	0.368**
<b>Tradium:</b> PSE	0.308**	0.252**	0.182**	0.251**	0.290**	0.395**
<b>IAL FVG:</b> PSE	0.486**	0.267**	0.321**	0.268**	0.404**	0.396**

*Note.* Spearman's rho ( $r_s$ ) was applied to examine the bivariate (ordinal) correlations.

Dimensions: 1 = Emotional Well-Being; 2 = Management of Everyday Life; 3 = Social Life; 4 = School Burnout; 5 = Social Inclusion into the Learning Community; 6 = Social inclusion into the Social Community. PSE = Physical Study Environment (ordinal variable: scale 1–4).

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

In Table 3 the bivariate correlations are shown for the physical study environment paired with each of the six dimensions of well-being and inclusion.<sup>14</sup> All associations were significant (marked with one or more asterisks [\*] in the table cells), and twelve of these were moderate to strong ( $r_s > 0.30$ ) while five were weak ( $r_s < 0.30$ ).

Interestingly, all bivariate correlations between the physical study environment and social inclusion into the learning community (Dim. 6) were close to 0.40. This suggests that the students' experience of the physical study environment correlated moderately with their experience of inclusion into the learning community. The same applied to the other dimensions in general (but to a lesser extent), which suggests that students who experience a better physical study environment tend to simultaneously experience higher well-being and more inclusion on average.

Although there is strong evidence of significant associations between the physical study environment and different aspects of well-being and inclusion, the direction of these associations cannot be determined solely from cross-sectional data. Based on the CA shown in Table 3, it is equally possible that students with stronger well-being and sense of inclusion in general rate the physical study environment higher due to emotional positivity (e.g. mood bias) or more stable personality traits.<sup>15</sup>

Still, the physical study environment is seemingly an influential variable that may explain at least part of the students' well-being and experienced inclusion as it is likely that method variance, if present, accounts for at most 41 percent of the variance when working with attitude measures, or around 31 percent of the variance in the field of education (Cote & Buckley, 1987; Podsakoff et al., 2003).

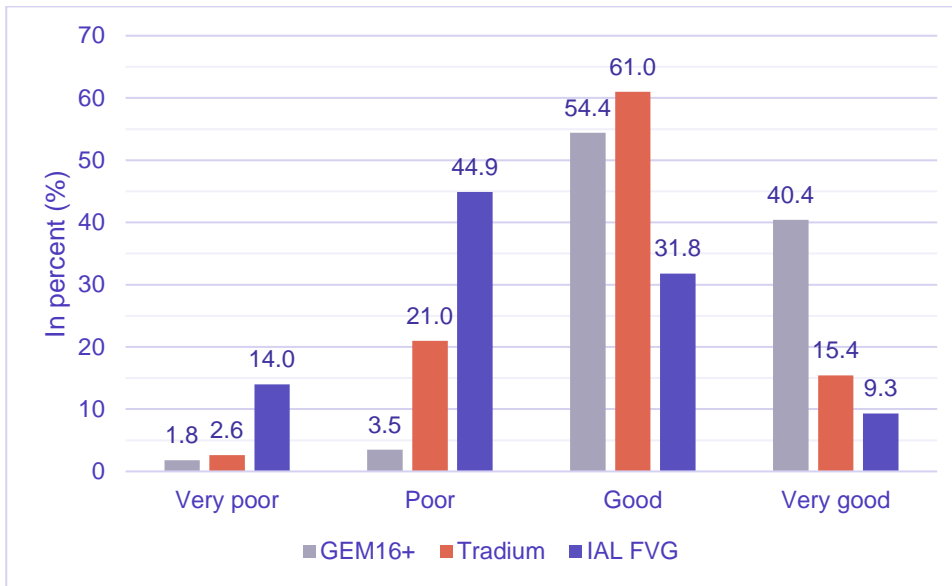
---

<sup>14</sup> Bivariate correlations of  $r_s$  range between  $-1$  and  $+1$  and are interpreted as follows:  $\pm 0.1$  = small;  $\pm 0.3$  = medium;  $\pm 0.5$  = large (Field, 2018).

<sup>15</sup> To reduce common-rater effects, other respondents (e.g. teachers) could rate the physical study environment in future cross-sectional surveys (see Podsakoff et al., 2003).



**Figure 6.** The physical study environment by school



As shown in Figure 6, there was a tendency for students at GEM16+ to rate the physical study environment higher compared students at Tradium and IAL FVG.

Although it seems clear that there is a difference between in the samples from the bar chart, it is necessary to conduct a statistical test to determine whether these results can be generalised to the population of students at three VET/SCL schools (especially as the sample sizes are vastly different) and to assess whether the standardised differences are small, medium, or large. Thus, an inferential statistical test provides more detailed information than basic descriptive statistics.

In the following contingency table, the differences in students' rating of the physical study environment are displayed for each of the partnering VET/SCL school. Although this table may seem complicated, it is concisely explained in the text and the table note, which should ideally make it comprehensible for all readers.



**Table 4.** Crosstabulation of physical study environment and school

Dependent variable			Partnering VET/SCL			Total
			GEM16+	Tradium	IAL FVG	
<b>Physical Study Environment</b>	Good/Very good	Count	54 <sub>a</sub>	437 <sub>b</sub>	44 <sub>c</sub>	535
		Expected Count	41.4	415.8	77.8	535
		% Partnering VET/SCL	94.7%	76.4%	41.1%	72.7%
		Standardised Residual	2	1	-3.8	
	Poor/Very poor	Count	3 <sub>a</sub>	135 <sub>b</sub>	63 <sub>c</sub>	201
		Expected Count	15.6	156.2	29.2	201
		% Partnering VET/SCL	5.3%	23.6%	58.9%	27.3%
		Standardised Residual	-3.2	-1.7	6.2	
<b>Total</b>	Count	57	572	107	736	
	Expected Count	57	572	107	736	
	% Partnering VET/SCL	100%	100%	100%	100%	

Note. Each subscript letter denotes a subset of partnering VET/SCL school categories whose column proportions do not differ significantly from each other at the 0.05 level. Zero cells (0%) have an expected count less than 5. The minimum expected count is 15.57.

$\chi^2(df) = 71.635(2)$ ,  $p < 0.001$  (two-sided). Effect:  $\Phi_c = 0.31$ ; BCa 95% CI = [0.24–0.39].<sup>16</sup>

Table 4 shows the crosstabulation of the physical study environment and the three partnering schools. The former variable was recoded into two categories to conduct a proper statistical test with expected counts above 5 as needed (Field, 2018).<sup>17</sup>

The results show that 94.7% of the students at GEM16+ rated the physical study environment as good or very good. Only 5.3% of their students rated the physical study environment as poor or very poor. In comparison, 41.1% of the students at IAL FVG rated their physical study environment as good or very good while 58.9% of their students rated the physical study environment as poor or very poor. At Tradium, 76.4% of the students rated the physical study environment positively while 23.6% of the students rated it negatively. Of the students combined, 72.7% rated the physical study environment positively across the three VET/SCL schools.

Using a chi-square test ( $\chi^2$ ) there was strong statistical evidence that students at GEM16+ rated the physical study environment higher than students at Tradium and IAL FVG. Moreover, students at Tradium rated the physical study environment significantly higher than students at IAL FVG. The effect size was estimated to be weak to moderate ( $\Phi_c = 0.31$ ; see notes under Table 4).<sup>18</sup>

<sup>16</sup> Bootstrapped (bias-corrected) confidence intervals were calculated (see Field, 2018).

<sup>17</sup> The variable was coded as follows: 1 = 'Good/Very good'; 2 = 'Poor/Very poor'.

<sup>18</sup> Cramer's V ( $\Phi_c$ ): 0.1 = small; 0.3 = medium; 0.5 = large (Field, 2018).

In addition, it was examined whether gender (individual factor) plays a role in relation to students' rating of the physical study environment. Here, the statistics indicate that males and females rate the physical study environment equally high.

## FAMILY SITUATION

For the multiple-choice question: "Please answer this question for the home where you have lived all or most of your life and tick the people you live(d) with", the most selected categories were mother (96.3%), father (86.5%), and sibling(s) (75.9%).

The remaining categories, such as foster/children's home or family relatives/guardians, were rarely selected on this multiple-choice question, which made these categories infeasible to analyse in more detail in relation to family situation.<sup>19</sup>

**Table 5.** Whom the student lives with or have lived with most of life

	GEM16+	Tradium	IAL FVG	Total
Mother	93.6% (44)	97.3% (547)	92.2% (94)	685
Father	63.8% (30)	89.1% (501)	82.4% (84)	615
Sibling(s)	48.9% (23)	82.4% (463)	52.9% (54)	540
Total	47	562	102	711

*Note.* The students were presented with seven different multiple-choice categories whereof three are included in this table. The individual student could select a category on each question, meaning that the percentages in this table are of the total counts for each school. Counts/frequencies are included in brackets in the table cells.  $N = 711$ .

As Table 5 displays, most students either live or have lived with their mother most of their lives (approx. 92–97%). A large percentage of students, but fewer compared to the first category, either live or have lived with their father most of their lives (approx. 64–89%), and the same applied to sibling(s) (approx. 49–82%).

This subsequent analysis investigates whether students who live with their mother, father, both of their parents, or both of their parents along with one or more sibling(s) have greater well-being compared to other groups. If this is the case, then the students' family situation may influence the results on well-being and inclusion which is critical to assess to develop an understanding of the root causes.

Since a radar chart is a descriptive method, an inferential method is utilised in this section to examine whether the above hypothesis is supported for the student body

---

<sup>19</sup> Only 9 respondents across the three VET/SCL schools reported that they had lived on a foster/children's home most of their lives, which is why this category was excluded.

at the three VET/SCL schools combined. Specifically, a MANOVA was created to assess all six dimensions of well-being and inclusion in a single model (by creating a linear composite variable) while including interaction effects (e.g., there could be a combined effect of family situation where students who live with both of their parents experience greater well-being and inclusion).<sup>20</sup>

As MANOVA is an advanced multivariate method, this analysis does not go in depth with all statistics or parameter estimates. Rather, the main results are interpreted and reported. It was attempted to make a separate MANOVA analysis for each school. However, splitting the dataset by school resulted in too few respondents in several categories for the samples from IAL FVG and GEM16+. Hence, an analysis was conducted on the entire dataset to explore possible connections between family background and the dimensions of social inclusion and well-being.

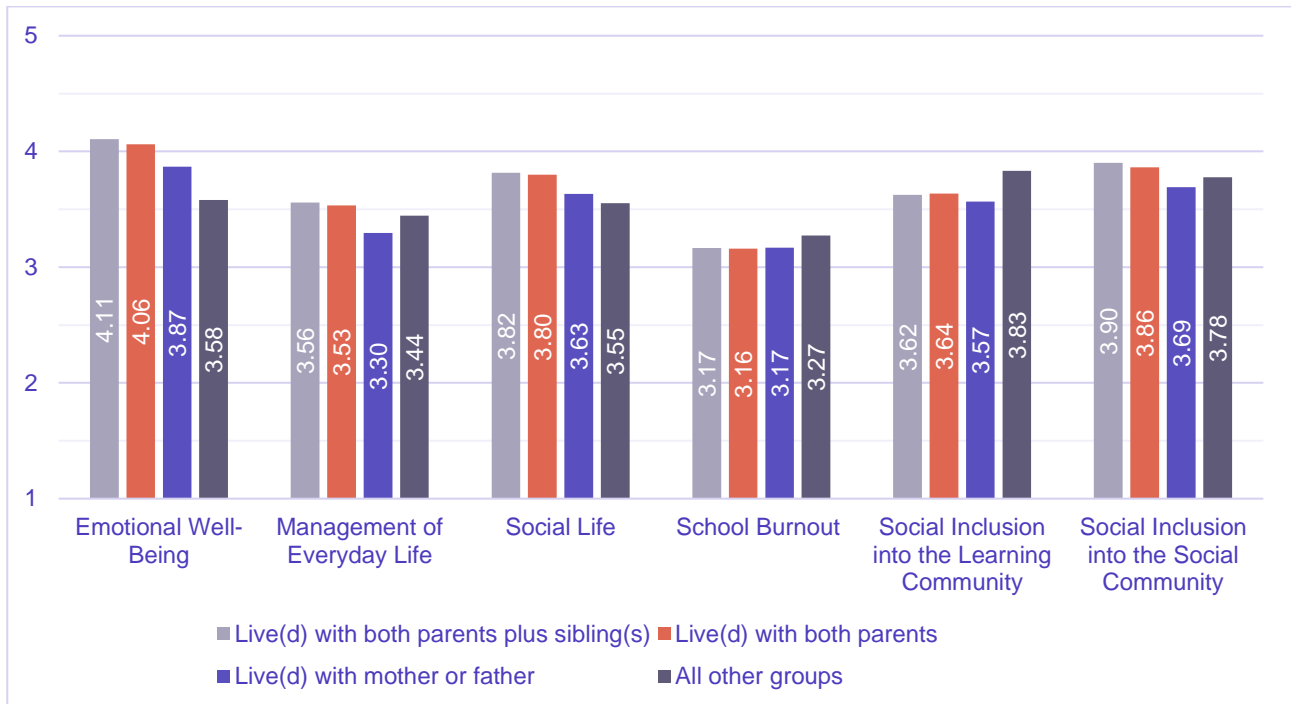
Initially, a non-significant result was found for the overall MANOVA that examined all possible associations and variable interactions ( $p = 0.107-0.563$ ).<sup>21</sup> This suggests that family background does not have an overall significant impact on well-being and inclusion as a combined variable. However, this does not exclude the possible impact on the individual dimensions of well-being and inclusion.

---

<sup>20</sup> MANOVA: Multivariate analysis of variance, which is an inferential method that contains several outcomes combined into a linear composite variable (Field, 2018).

<sup>21</sup> Pillai's trace statistic was used for the overall MANOVA, which is generally considered the most valid approach (Field, 2018).

**Figure 7.** Family constellations and the six dimensions of inclusion and well-being



Note. No significant overall effect was found using MANOVA ( $p > 0.05$ ). However, significant between-subject effects were found, which are described in the analysis.

Sample size per group: Lived(d) with both parents plus sibling(s):  $n = 453$ . Live(d) with both parents:  $n = 556$ . Live(d) with mother or father:  $n = 116$ . Other groups:  $n = 28$ .

Looking at Figure 7, the vertical bars display relatively identical results on most dimensions of inclusion and well-being. For the most part, the descriptive statistics show that students who live(d) with both parents plus one or more siblings, and students who live(d) with both parents, in general, experience higher emotional well-being, better management of everyday life, stronger social life, and better inclusion into the social community, but no significant difference was present for neither school burnout nor for social inclusion into the learning community, which in fact showed opposite and unexpected patterns. However, since the category ‘All other groups’ contain very few respondents ( $n = 28$ ), these results are most likely caused by random fluctuation and should thus not be generalised.

The MANOVA revealed a significant effect for management in everyday life for the group of students who live(d) with both parents plus one or more siblings ( $p = 0.045$ ) and for students who live(d) with both parents ( $p = 0.013$ ). Students who live(d) with both parents also reported significantly higher social inclusion into the social

community ( $p = 0.039$ ). However, the differences were all very small ( $\eta^2_p = 0.006-0.012$ ), below small effects (Field, 2018).<sup>22</sup>

To summarise, the findings indicate that, although family constellation plays a significant role in relation to specific dimensions of well-being and inclusion, the measured differences were very small in general. Hence, there is weak evidence that certain family constellations affect inclusion and well-being, which indicates that this background variable is not a confounder of general concern in this study, which is why the general results are not considered biased by this variable.

Thus, the overall effect of this background factor was considered in relation to the general results of well-being and inclusion as intended (cf. Krogstrup et al., 2021a).

### **3.3. SCHOOL-SPECIFIC BACKGROUND FACTORS**

In this third main section of the analysis, the school specific questions are analysed descriptively and in relation to the six dimensions of well-being and inclusion.

First, the variable about apprenticeship agreement is examined, which was measured for both GEM16+ and IAL FVG. Second, the influence of year of attendance is examined in relation to well-being and inclusion for Tradium and IAL FVG. Third, the levels of well-being and inclusion are examined in relation to the specific subjects the students were enrolled in at Gem16+, Tradium, and IAL FVG.

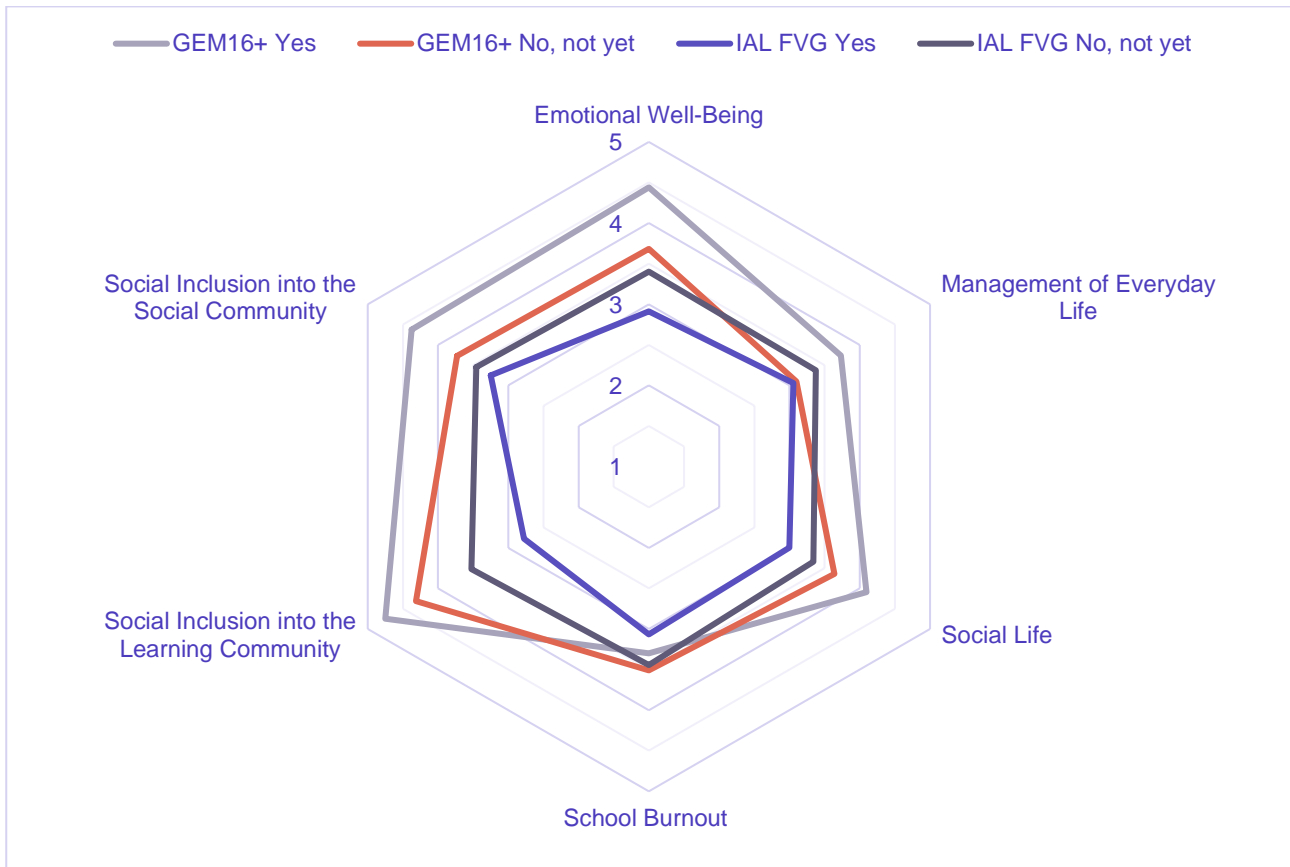
#### **APPRENTICESHIP AGREEMENT**

In the cross-sectional survey, the students were asked: “Do you have an apprenticeship agreement?” Basically, the students could answer either yes or no, which is shown in the following radar chart. Based on the literature review, it was expected that students with an apprenticeship agreement would have higher well-being and sense of inclusion in general (Krogstrup et al., 2021a).

---

<sup>22</sup> Partial eta squared ( $\eta^2_p$ ) is interpreted as follows: 0.02 = small; 0.13 = medium; 0.26 = large (Field, 2018).

**Figure 8.** Do you have an apprenticeship agreement?



*Note.* The response “Not relevant, I don’t need an apprenticeship in my education/this semester” was merged with the category ‘No, not yet’. IAL FVG:  $n = 107$ ; GEM16+:  $n = 59$ .

Figure 8 shows the sense of inclusion and well-being for students with or without an apprenticeship agreement at GEM16+ and IAL FVG.

Unexpectedly, the results show that students at IAL FVG with an apprenticeship agreement experienced less inclusion and lower well-being on all dimensions compared to students without an apprenticeship agreement. The opposite was the case at GEM16+ where students with an apprenticeship agreement experienced greater well-being and inclusion. However, due to the low response rate in the category ‘Yes’ at both schools, it is possible that these results are not representative (as indicated by the scores that varied to a large extent on most dimensions). Hence, more data is needed to draw more accurate conclusions.<sup>23</sup>

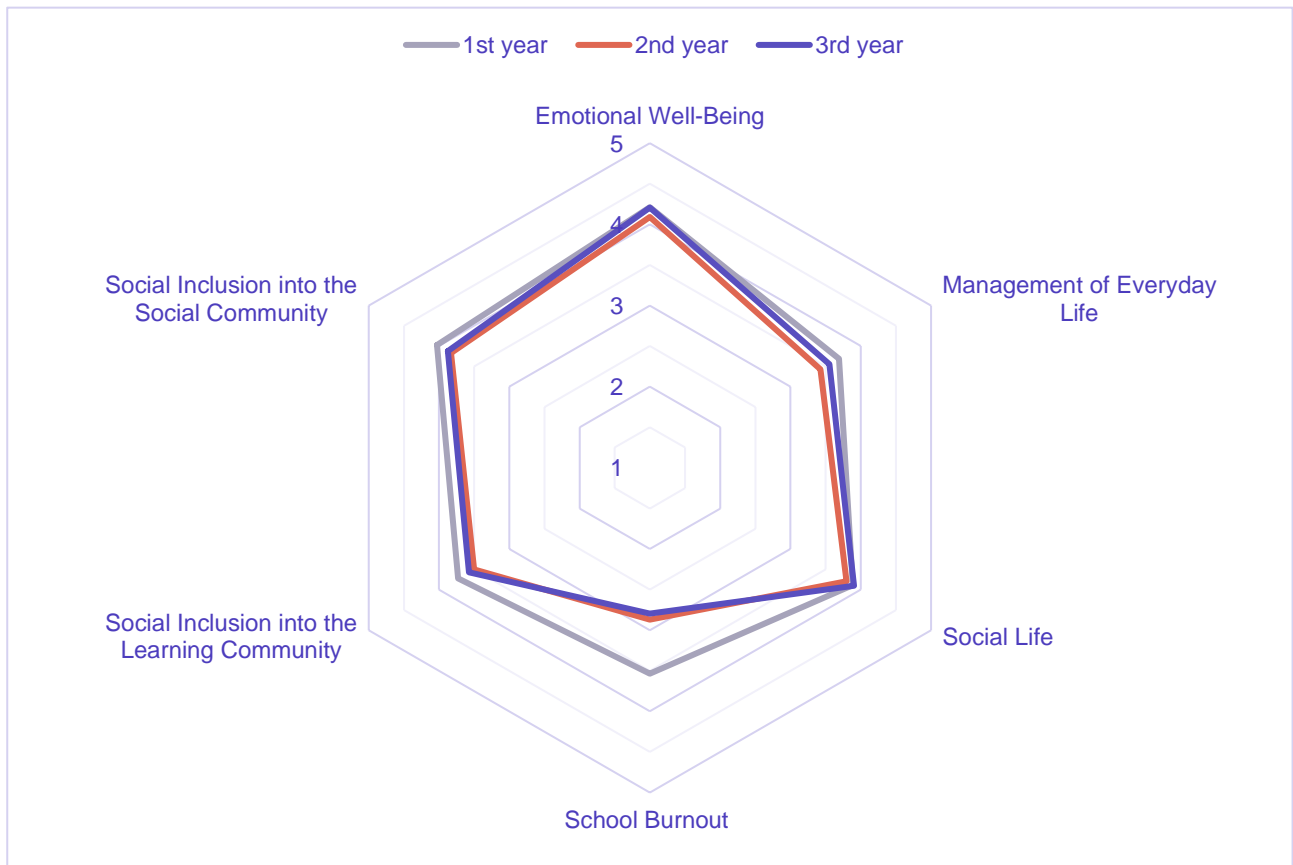
Still, it can be noted that students at IAL FVG with an apprenticeship agreement on average had a negative score on social inclusion into the learning community, which dragged the average score below 3 (inside the fourth hexagon from the midpoint).

In addition, other causes than the apprenticeship agreement could underlie these differences. It is curious that students at IAL FVG had a score below 3 on social inclusion into the learning community, which implies that the students in this category responded negatively to most or even all questions of this construct.

## YEAR OF ATTENDANCE

The students at IAL FVG and Tradium were asked “Which year are you attending?” where students at IAL FVG could choose between one to four years and students at Tradium could choose between one to three years. In the following, radar charts are used to depict the self-reported levels of well-being and inclusion among students on different years of attendance at Tradium and IAL FVG.

**Figure 9.** Which year are you attending? (Tradium)



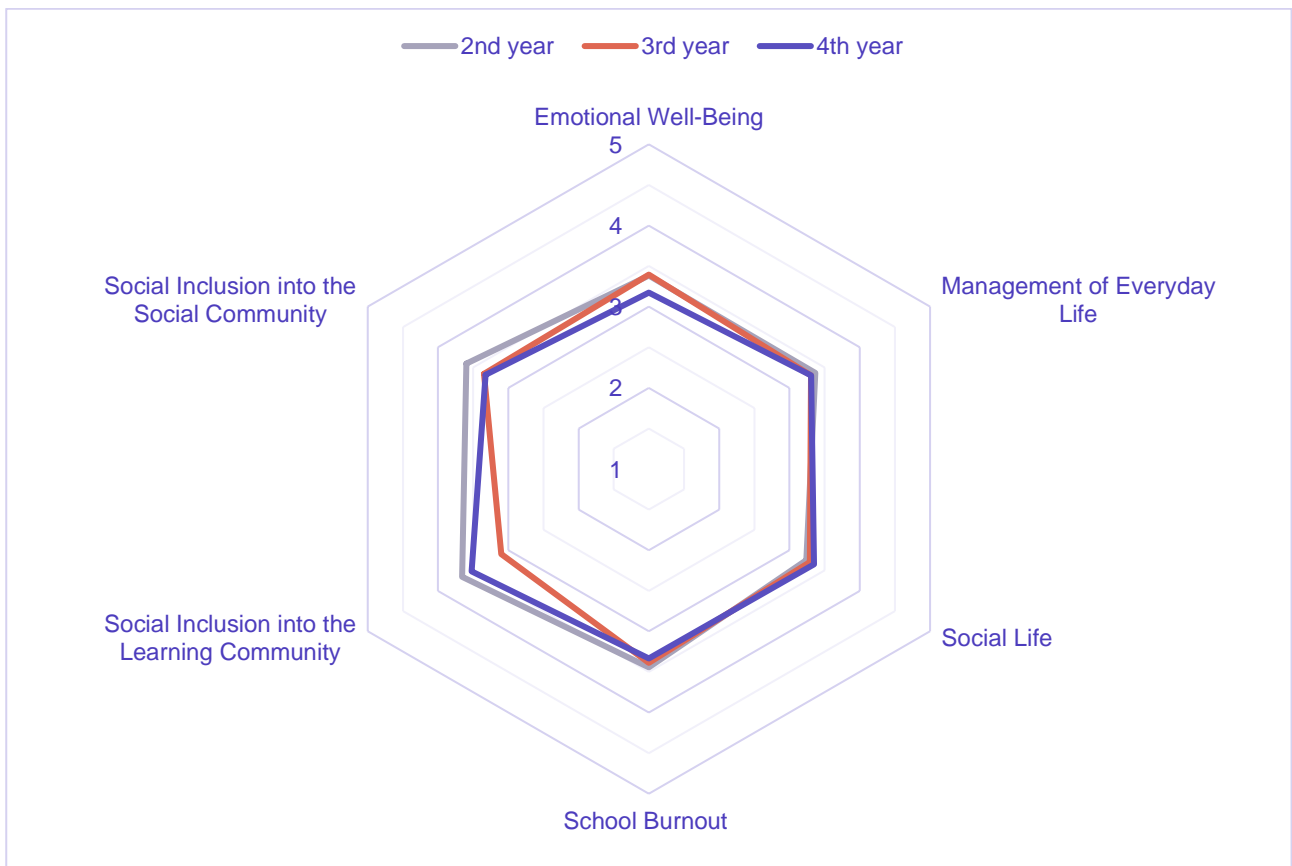
Note.  $n = 574$ .

<sup>23</sup> At GEM16+ only 6 students answered that they had an apprenticeship agreement, and the same applied to 15 at IAL FVG, which is why these results are not generalisable.

Figure 9 shows that students at Tadium experienced similar levels of inclusion and well-being and all dimensions except for school burnout. Thus, the results indicate the levels of school burnout increase after the first year of attendance and that the level of burnout remains higher during the rest of the educational programme.

These results are considered generalisable and significant ( $p < 0.001$ ), which is because the sample size is larger from Tadium and thus more representative. In fact, the burnout levels dropped to a large extent ( $d = 0.74$ ) between the first and the second year at Tadium, which indicates that burnout levels rise quite intensely, which is problematic since burnout and educational stress are known to lead to higher dropout intentions (Eicher et al., 2014; Krogstrup et al., 2021b).

**Figure 10.** Which year are you attending? (IAL FVG)



Note. No students who answered the questionnaire attended the 1<sup>st</sup> year.  $n = 107$ .

Figure 10 shows that the levels of inclusion and well-being at IAL FVG were also similar on most dimensions when comparing the years of attendance. There were somewhat larger levels of well-being during the second and fourth year.



The students felt less included in the learning community during the third year, but it is uncertain whether this tendency applies to the school in general, which is why this finding is not considered particularly important in this report.

## FIELD OF STUDY AND SUBJECTS SUBMITTED TO

Students at IAL FVG answered the question “Which overall field of study are you submitted to?”, whereas students at GEM16+ and Tradium answered the question “Which options are you enrolled to?”

In the following analysis, the students’ responses have been recoded and categorised and subsequently analysed in relation to their overall sense of well-being and inclusion and depicted on radar charts.

Most students at GEM16+ (75.4%) answered that they study four subjects or more. Although the students at GEM16+ can study multiple subjects, they can basically choose between ECDL (European Certificate of Digital Literacy), physics, and biology as their core subject (Government of Malta, 2022).

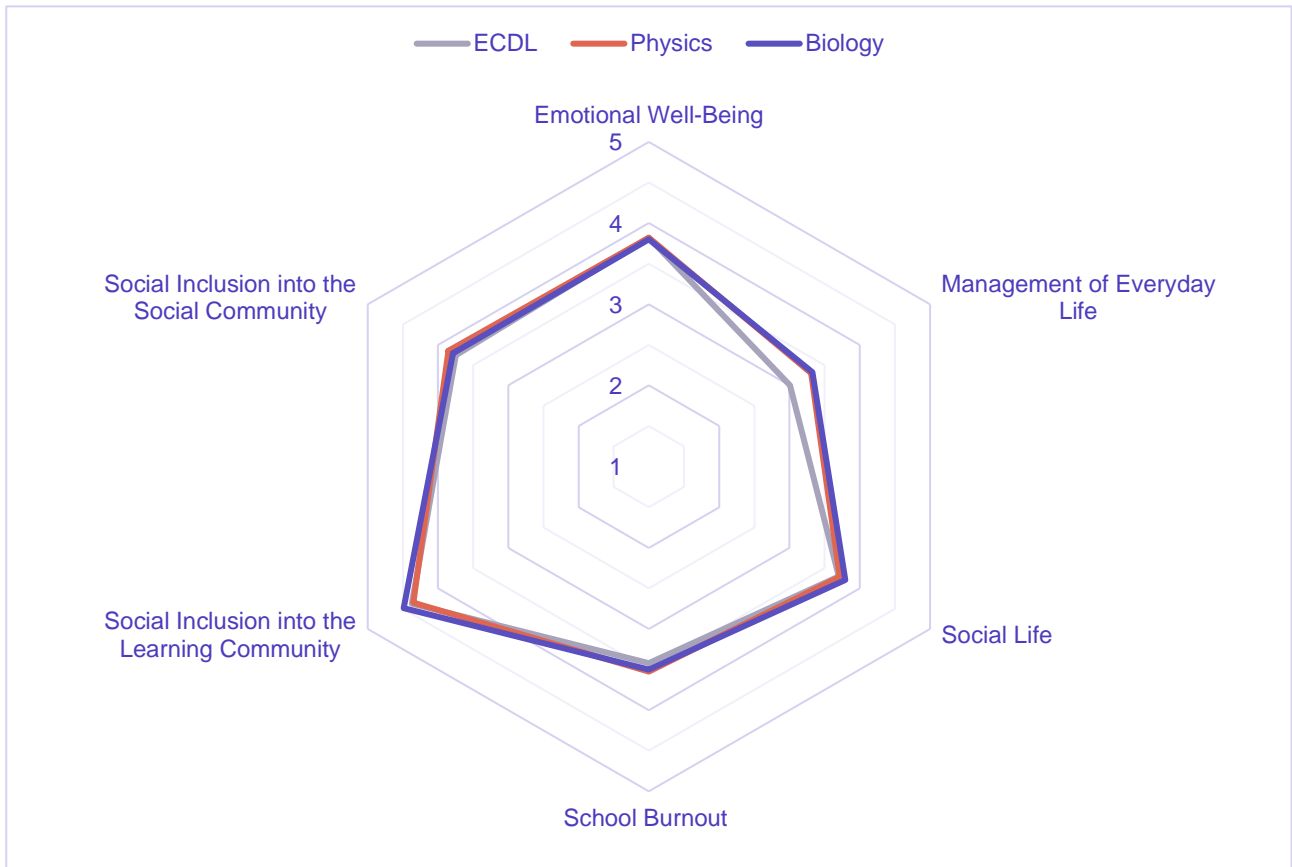
**Table 6.** Which options are you enrolled to? (GEM16+)

	<b>ECDL</b>	<b>Physics</b>	<b>Biology</b>	<b>Other</b>	<b>Total</b>
Percent	35.8%	37.7%	30.2%	9.4%	113.2%
Count	19	20	16	5	60

*Note.* Each student could select multiple options.  $N = 59$ .

Table 6 shows that most students at GEM16+ attend classes in physics, ECDL, or Biology. Of the students, 9.4% have chosen other options. Thus, since these subjects are primary at GEM16+, it is examined whether any variation was present based on which main option for subject the students were enrolled in.

**Figure 11.** Well-being and inclusion by subject field (GEM16+)



Note.  $n = 55$

As shown in Figure 11, no apparent difference was present at GEM16+ based on core subject field. The only dimension that was noticeably lower was management of everyday life for ECDL; however, this difference is most likely random.

At Tradium, the students could select ‘Economics’, ‘Market’, or ‘International language’. In addition, they had the option to manually type another field of study. Of the students who answered ‘other’, 33 students typed ‘Law’ as their main subject.

**Table 7.** Which overall field of study are you submitted to? (Tradium)

	Economics	Market	International Language	Law	Total
Percent	35.0%	49.7%	9.3%	5.9%	100%
Count	195	277	52	33	557

Note. Each student could select a single field of study.

As shown in Table 7, most students at Tradium who answered the questionnaire selected 'Market' (49.7%) whereas 'Economics' (35.0%) was the second most frequently chosen category followed by 'International Language' (9.3%).

The students at IAL FVG could write their response in the questionnaire manually, which means that many different responses were registered with few counts. In the following table and radar chart, only their top three choices are displayed.

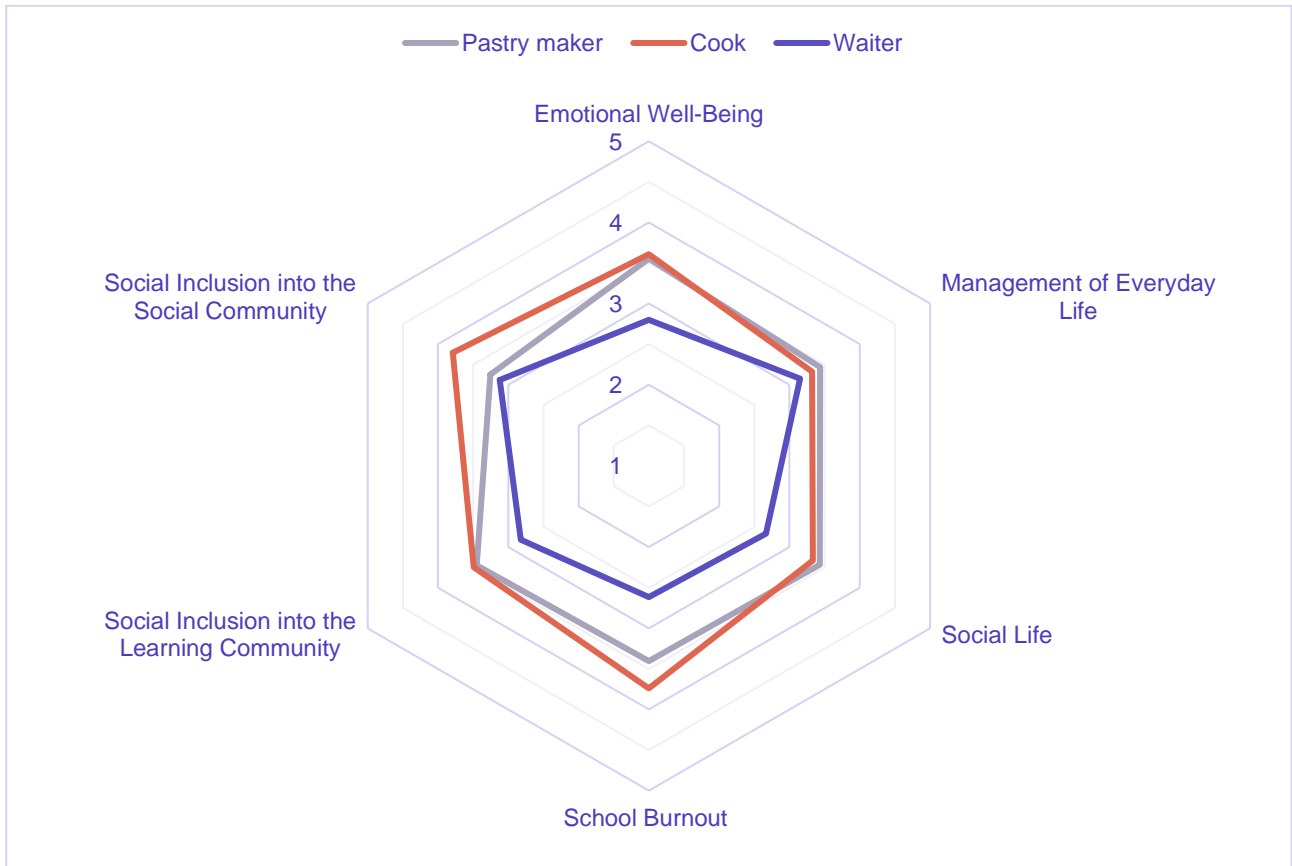
**Table 8.** Which overall field of study are you submitted to? (IAL FVG)

	<b>Pastry maker</b>	<b>Cook</b>	<b>Waiter</b>	<b>Total</b>
Percent	40%	38.5%	21.5%	100%
Count	26	25	14	65

*Note.* 'Maker' was relabelled 'Pastry maker'; 'Chef' was relabelled 'Cook'.

As shown in Table 8, most students at IAL FVG participate in courses related to the service or restaurant industry. However, students at IAL FVG also participate in courses on beauty (e.g. beautician) or business in a more general sense (e.g. shop assistant). Thus, only the most popular subjects are shown in the table.

**Figure 12.** Well-being and inclusion by overall field of study (IAL FVG)



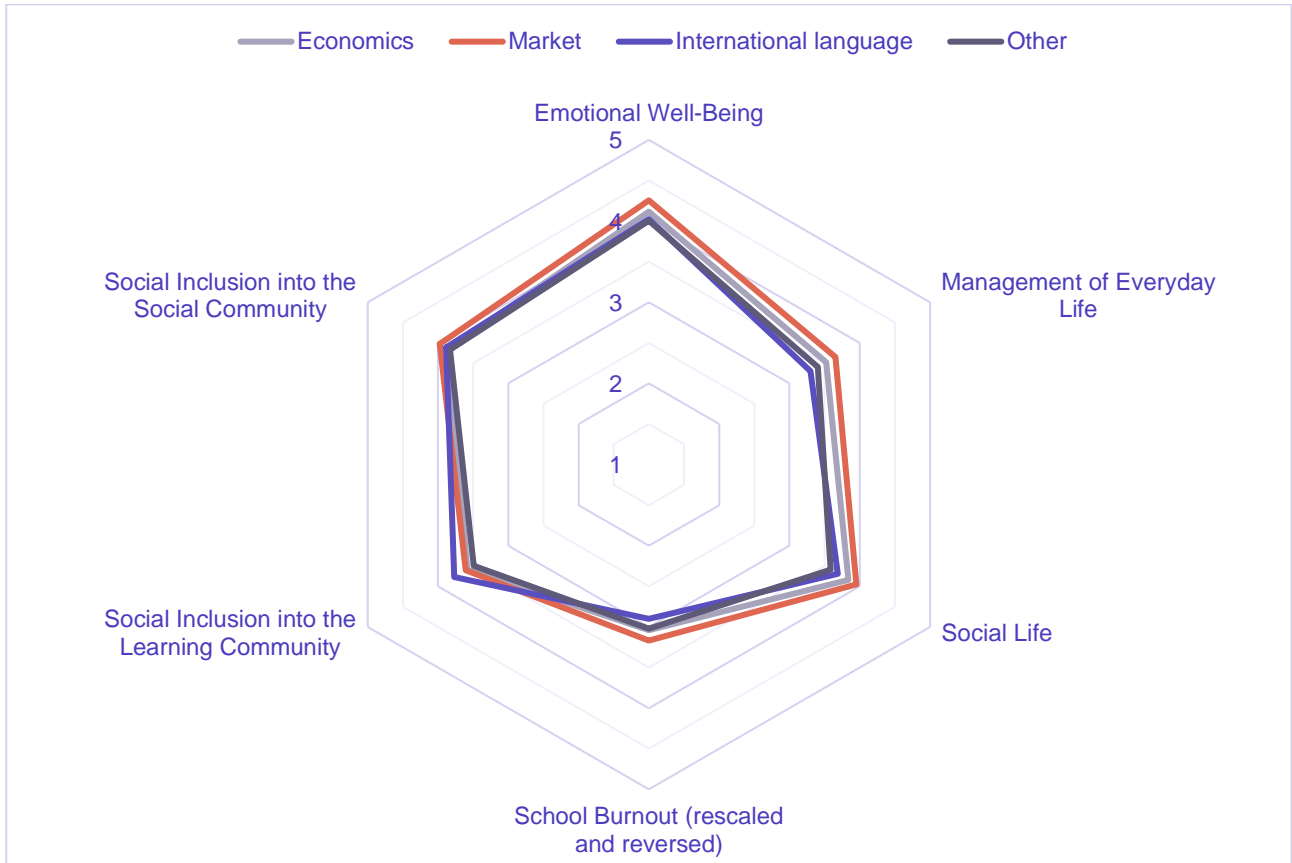
Note.  $n = 61$ .

As shown in Figure 12, students practicing at becoming waiters experienced less well-being and inclusion on average than those studying to become cooks or pastry makers. However, due to the low count of waiters, these results should be interpreted with caution since a few negative responses can easily skew the distribution of scores and thereby affect the mean score a great deal.

Still, this is something that will be further looked into during the analysis of the next round of measurement where the next results will be compared to the baseline results presented in this report.

Since the students at Tradium could select a single overall field of study in the survey, and since all categories contained sufficient responses ( $n > 30$ ), a radar chart has been made to examine whether well-being and inclusion varied across the different subject fields at Tradium, where the number of responses was greater, resulting in more generalisable findings.

**Figure 13.** Well-being and inclusion by overall field of study (Tradium)



*Note.* The category 'other' contained responses by 48 students, of which 33 studied Law.

As shown in Figure 13, no apparent differences emerged on well-being and inclusion as experienced by students in various subject fields at Tradium. On all dimensions, the scores were above or close to the midpoint ( $M = 3$ ).

As it can be seen, school burnout is the dimension where the students score the lowest at Tradium, which is the case no matter the overall field of study. This suggests that school burnout is a general problem at Tradium for all students, in other words, it is apparently not a subject-specific problem.

It can be observed in the sample that students who study market in general score a bit higher on most dimensions. However, these small differences should not be exaggerated. Hence, no subject-specific differences at Tradium can be inferred from the data at this point, which suggests that the primary drivers of well-being and inclusion are not subject-specific, but rather of a more general nature.

## 4. CONCLUSION

In this report, the mean differences between Tradium, GEM16+, and IAL FVG were examined on four dimensions of well-being and two dimensions of inclusion. The mean differences were assessed using both unstandardised (i.e. raw scores) and standardised measures. The unstandardised scores were depicted on radar charts while the standardised scores were depicted on a 500-point scale.<sup>24</sup>

Based on the main radar chart (See Figure 3) and elaborate analysis of the six dimensions of well-being and inclusion, the following is concluded:

- All mean scores ( $M$ ) on the six dimensions were positive ( $M > 3$  on the scales from 1 to 5). This indicates that well-being and social inclusion is positive on average in the three partnering schools.
- Students at Tradium experienced significantly higher emotional well-being than students at IAL FVG and GEM16+ – moderate to large differences.
- Students at Tradium scored significantly higher on management of everyday life than students at GEM16+ and IAL FVG – small to medium differences.
- Students at Tradium experienced significantly more school burnout compared to students at IAL FVG and GEM16+. These differences were small, but close to moderate, which was unexpected as this contrasted the other dimensions where Tradium typically had relatively strong scores.
- Students at Tradium reported a significantly higher score on social life than students at IAL FVG – a large difference.
- Students at GEM16+ had an almost perfect score on social inclusion into the learning community ( $M_{ed} = 5$ ;  $M = 4.35$ ), significantly higher than both IAL FVG and Tradium – a huge difference (almost 1 std. dev.; see Figure 4).
- Students at Tradium experienced significantly more social inclusion into the social community than students at IAL FVG – a large difference.

In summary, the findings suggest that all schools had positive well-being and inclusion scores (above each scale's midpoint). Still, the results also highlight specific dimensions where attention could be focused in practice to boost students' sense of well-being and self-perceived social inclusion.

For the measured background variables ( $x$ ) in relation to the six dimensions of well-being and inclusion ( $y$ ), the following is concluded:

---

<sup>24</sup> Cohen's  $d$  was interpreted from Hattie's (2009) standard criteria designed for educational research where standard deviations of 0.2, 0.4, and 0.6 are considered small, medium, and large, respectively (see Figure 4 where standard deviations of 0.2, 0.4, and 0.6 correspond to 20, 40, and 60 points, respectively).

- At Tradium, girls experienced (slightly) less emotional well-being than boys, which was not surprising since recent empirical studies in Nordic countries have shown that boys in general score higher on positive mental well-being indicators, whereas girls score higher on negative indicators such as loneliness and social marginalisation (Andersen, 2021; Lyyra et al., 2021).
- No significant gender difference in terms of well-being or inclusion was observed at IAL FVG or GEM16+.
- The physical study environment correlated significantly (mostly moderately) with all factors of well-being and inclusion. This suggests that students who experience the physical study environment as good/very good are much more likely to experience higher well-being and inclusion.
- In all partnering schools, the physical study environment was especially associated with social inclusion into the learning community.
- However, it is likely that students with higher well-being rate the physical study environment positively partly due to psychological factors such as transient mood or more stable personality or character traits – known as common-rater bias, which can inflate effects (see Podsakoff et al., 2003).
- A chi-square ( $\chi^2$ ) test revealed that students at GEM16+ rated the physical study environment significantly higher than students at Tradium and IAL FVG; vice versa, students at IAL FVG rated the physical study environment lower than students at GEM16+ and Tradium – a medium effect ( $\Phi_c = 0.31$ ).
- Female and male students rated the physical study environment equally.
- Family constellation did not have an overall impact on the six dimensions of well-being and inclusion. However, when assessing the individual dimensions of well-being and inclusion, one third-level interaction emerged, suggesting that students who live(d) with both parents along with one or more siblings, in general, experience greater management of life. Still, this result was barely significant and revealed only a miniscule effect ( $n^2_p = 0.006$ ).
- Moreover, it was found that students who live(d) with both parents experience greater management of everyday life ( $n^2_p = 0.009$ ) along with stronger inclusion into the social community ( $n^2_p = 0.012$ ) – both very small differences.
- Finally, it was found that students who live(d) with both parents experienced stronger emotional well-being ( $n^2_p = 0.006$ ).
- All differences in relation to family constellation were very small, which suggests that many other factors influence students' well-being.

In summary, girls experienced lower well-being at Tradium, which points to a possible (contextual/cultural) gender difference. Students at the three partnering schools rated the physical study environment significantly different. Hence, the quality of the physical study environment could be a cause (i.e. a mechanism) of well-being and social inclusion as these variables were often moderately correlated.

Thus, enhancing the physical study environment could provide additional benefits in terms of increased well-being and perceived inclusion among students.

Family constellation was found to be a positive contributor to individual dimensions of well-being and inclusion. The overall effect of family constellation on inclusion and well-being was non-significant.

For the school-specific variables, the following is concluded:

- At IAL FVG, students with an apprenticeship agreement scored lower on well-being and inclusion compared to students without an apprenticeship agreement while the opposite was the case at GEM16+. Due to a low number of responses among students with an apprenticeship agreement, further information is needed to draw more accurate conclusions.
- Students at IAL FVG experienced similar levels of inclusion and well-being across the different classes (years of attendance). The largest variations were evident in relation to social inclusion into the learning community and social inclusion into the social community.
- Students at Tradium experienced similar levels of inclusion and well-being across the three years of attendance except for the dimension on school burnout. Students at Tradium experienced much larger burnout levels during the second and third year compared to the first ( $p < 0.001$ ,  $d = 0.74$ ). Due to the sample size this finding is considered significant and reliable/valid.
- In relation to overall field of study or specific subject fields and their connection with levels of inclusion and well-being, no important differences were evident at Tradium or GEM16+. However, at IAL FVG, waiters generally had lower well-being compared to other groups. Still, this result is uncertain due to the low number of responses in each category.

In summary, no discernible pattern was present for students with/without an apprenticeship agreement. More data is needed to draw more accurate conclusions as the data showed contrasting patterns for IAL FVG and GEM16, which were most likely random. Moreover, students at Tradium experienced much higher levels of burnout after the first school year. Finally, waiters at IAL FVG experienced reduced well-being and lower inclusion on all dimensions, but this result was also based on very few respondents and should therefore be interpreted with caution.

For more accurate results on the school-specific variables, larger samples are needed for the next round of measurement. The next round of data collection will occur in fall 2022 and will be available for analysis early in 2023.



## REFERENCES

- Agresti, A., Franklin, C. A., & Klingenberg, B. (2018).** *Statistics: The art and science of learning from data*. Harlow, England: Pearson Education Limited.
- Andersen, M. B. (2021).** Estimating the percentage of marginalised students in Danish public Schools: Challenges encountered in measuring marginalisation. *International Journal of Inclusive Education (2021)*, 1–17.  
<https://doi.org/10.1080/13603116.2021.1991494>
- Bryman, A. (2021).** *Social research methods* (6th ed.). Oxford University Press.
- CaBE (2021):** Finalized questionnaire (W.P.3.6). Department of Culture and Learning, Aalborg University (delivered previously as an appendix).
- Cohen, J. (1988).** *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Cote, J. A., & Buckley, R. (1987).** Estimating trait, method, and error variance: Generalizing across 70 construct validation studies. *Journal of Marketing Research*, 24,315–318. <https://doi.org/10.1177%2F002224378702400308>
- De Vaus (2014).** *Surveys in social research* (6th ed.). Routledge.
- Eicher V, Staerklé C, Clémence A. (2014).** I want to quit education: A longitudinal study of stress and optimism as predictors of school dropout intention. *Journal of Adolescence (London, England)*, 37(7) 1021–30. <https://doi.org/10.1016/j.adolescence.2014.07.007>.
- Field, A. (2018).** *Discovering statistics using IBM SPSS statistics: North American edition* (5th ed.). Sage Publications, Inc.
- Gaskin, J. (2022).** Validity and Reliability. Retrieved 21 June 2022 from <http://statwiki.gaskination.com/index.php?title=CFA>
- Government of Malta (2022)** GEM16+ Education programme. Retrieved 16 June 2022 from <https://education.gov.mt/en/education/Pages/GEM16plus.aspx>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019).** *Multivariate data analysis* (8th ed.). Andover, Hampshire: Cengage Learning, EMEA.
- Hattie, J. (2009).** *Visible learning*. Routledge.
- Jensen, L. B., Lorentsen, A. Andersen, M. B., Christiansen, N. L. S., & Spangsberg, I. (2020).** Skolen er for alle, men mere for nogle end for andre [The school is for everyone, but more for some than for others] in *Udfordringer og succeser i skoleudvikling: Når tallene taler* (pp. 89–113). Aalborg University: FULM. <https://vbn.aau.dk/en/publications/udfordringer-og-succeser-i-skoleudvikling-n%C3%A5r-tallene-taler>
- Krogstrup, H. K., Mortensen, N. M., & Bendixen K. (2021a).** *Intellectual output 3: Questionnaire and radar chart for measuring students' mental well-being and social inclusion*. CaBE, Aalborg University.

Delivery of Intellectual Output 3: *A comparative study of the baseline results of well-being and inclusion*. Delivered by CaBE, Aalborg University, 01-07-2022.

- Krogstrup**, H. K., Mortensen, N. M., Jensen, J. M. W., & Bendixen K. (2021b). *Systematic literature review (W.P.3.4): How dimensions of mental well-being and social inclusion affect dropout from vocational educational and training schools*. CaBE, Aalborg University.
- Lyyra**, N., Thorsteinsson, E. B., Eriksson, C., Madsen, K. R., Tolvanen, A., Löfstedt, P., & Välimaa, R. (2021). The association between loneliness, mental well-being, and self-esteem among adolescents in four Nordic countries. *International Journal of Environmental Research and Public Health*, 18, 7405.  
<https://doi.org/http://dx.doi.org/10.3390/ijerph18147405>
- Malhotra**, N. K., Dash S. (2011). *Marketing Research an Applied Orientation*. London: Pearson Publishing.
- MCE** (2021). *Metodenotat om beregning af trivselsindikatorer* [Method notes on calculation of well-being indicators]. Ministry of Children and Education. Retrieved 3 June 2022 from <https://www.uvm.dk/statistik/grundskolen/elever/trivselsmaalinger>
- MCE** (2022). *Elevernes trivsel – landsoverblik* [Students' well-being – nationwide]. Ministry of Children and Education. Retrieved 8 June 2022 from <https://uddannelsesstatistik.dk/Pages/Reports/1792.aspx>
- Messiou**, K. (2012). *Confronting marginalisation in education: A framework for promoting inclusion*. New York: Routledge.
- Nunnally**, J.C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Parviainen**, M., Aunola, K., Torppa, M., Poikkeus, A.-M., & Vasalampi, K. (2020). Symptoms of psychological ill-being and school dropout intentions among upper secondary education students: A person-centered approach. *Learning and Individual Differences*, 80, 101853. <https://doi.org/10.1016/j.lindif.2020.101853>
- Podsakoff**, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Qvortrup**, A., & Qvortrup, L. (2018). Inclusion: Dimensions of inclusion in education, *International Journal of Inclusive Education*, 22:7, 803-817, <https://doi.org/10.1080/13603116.2017.1412506>

## APPENDIX A

**Table 9.** Validity and reliability statistics of the six dimensions

Factor/index	No. items	Cronbach's alpha ( $\alpha$ )	AVE
Emotional Well-Being (factor)	5	0.875	58.98%
Management of Everyday Life (index)	6	0.691	31.23%
Social Life (index)	7	0.773	38.89%
School Burnout (factor)	4	0.735	41.08%
Social Inclusion into the Learning Community (factor)	3	0.747	50.44%
Social Inclusion into the Social Community (factor)	4	0.695	39.89%

*Note.* AVE = Average variance extracted. Factors are assumed to reflect underlying constructs that are often regarded as psychological and/or social phenomena. Indices are (formative) theoretical constructions consisting of non-reflective items (Hair et al., 2019).

In terms of internal validity, AVE was very good for Emotional Well-Being and good for Social Inclusion into the Learning Community. This measure should ideally be above 50 percent for all reflective factors (Hair et al., 2019). However, some researchers argue that values below or close to this benchmark is acceptable if only reliability is established (Gaskin, 2022; Malhotra & Dash, 2011). Hence, this common validity requirement is often considered too strict in organisational studies.

Cronbach's alpha was acceptable for all factors, although Emotional Well-Being and Social Inclusion into the Learning Community were the most valid and reliable overall. For factors, Cronbach's alpha should preferably be above 0.7 in standard research or at least above 0.6 for exploratory analysis (Field, 2018; Nunnally, 1978).

For indices, the theoretical construction is primary, which is why Cronbach's alpha and AVE are not critical. In this sense, the indices were validated theoretically during the systematic review process and co-evaluated by students in a cooperative, co-creation process before data collection (cf. Krogstrup et al., 2021a).

Adaptions were made to the factors to optimise both validity and reliability.

## APPENDIX B

**Table 10.** Multiple comparisons (Univariate ANOVAs)

Hochberg's post hoc test <sup>a</sup>			95% CI		
Dependent variable		<i>p</i> -value	Lower Bound	Upper Bound	
<b>Emotional Well-Being</b>	GEM16+	Tradium	0.001**	-0.68	-0.15
		IAL FVG	0.004**	0.11	0.74
	Tradium	GEM16+	0.001**	0.15	0.68
		IAL FVG	< 0.001***	0.64	1.04
	IAL FVG	GEM16+	0.004**	-0.74	-0.11
		Tradium	< 0.001***	-1.04	-0.64
<b>Management of Everyday Life</b>	GEM16+	Tradium	< 0.001***	-0.64	-0.16
		IAL FVG	0.370	-0.45	0.11
	Tradium	GEM16+	< 0.001***	0.16	0.64
		IAL FVG	0.006**	0.05	0.41
	IAL FVG	GEM16+	0.370	-0.11	0.45
		Tradium	0.006**	-0.41	0.05
<b>Social Life</b>	GEM16+	Tradium	0.228	-0.43	0.07
		IAL FVG	0.004**	0.10	0.68
	Tradium	GEM16+	0.228	-0.07	0.43
		IAL FVG	< 0.001***	0.38	0.75
	IAL FVG	GEM16+	0.004**	-0.68	-0.10
		Tradium	< 0.001***	-0.75	-0.38
<b>School Burnout</b>	GEM16+	Tradium	0.011*	0.07	0.73
		IAL FVG	0.900	-0.29	0.49
	Tradium	GEM16+	0.011*	-0.73	-0.07
		IAL FVG	0.013*	-0.55	-0.05
	IAL FVG	GEM16+	0.900	-0.49	0.29
		Tradium	0.013*	0.05	0.55
<b>Social Inclusion into the Learning Community</b>	GEM16+	Tradium	< 0.001***	0.40	1.08
		IAL FVG	< 0.001***	0.53	1.33
	Tradium	GEM16+	< 0.001***	-1.08	-0.40
		IAL FVG	0.227	-0.07	0.45
	IAL FVG	GEM16+	< 0.001***	-1.33	-0.53
		Tradium	0.227	-0.45	0.07
<b>Social Inclusion into the Social Community</b>	GEM16+	Tradium	0.420	-0.38	0.10
		IAL FVG	0.010*	0.06	0.63
	Tradium	GEM16+	0.420	-0.10	0.38
		IAL FVG	< 0.001***	0.31	0.67
	IAL FVG	GEM16+	0.010*	-0.63	-0.06
		Tradium	< 0.001***	-0.67	-0.31

Note. <sup>a</sup> Hochberg's post hoc test was used as this corrects for bias when groups vary in size (Field, 2018). Significant differences are flagged with an asterisk (\*) in the column '*p*-value'.

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.