Bridging Learning Experiences In and Out of School: Students' Views

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Abstract

This article presents an exploratory study examining the importance that students attribute to pedagogical strategies focused on bridging learning in-and-out of school. The aim is twofold: to analyse students' views of such strategies in different types of school (personalised learning -PL- and mirror schools), and to investigate whether different perceptions appear among three selected PL schools according to their degree of implementation of such strategies. We have administered the EPAE-A questionnaire to a sample of 3001 students (1481 from 5 PL schools, and 1520 from 5 mirror schools) to determine the value to these type of strategies for learning. The results indicate broad student agreement on the importance of connected learning strategies for learning and engagement in both groups. Moreover, our analysis reveals a certain relationship between the amount of pedagogical strategies aimed at promoting connections between in and out of school learning in the three selected cases and the perceived frequency reported in the questionnaire. In conclusion, our study highlights different elements to help teachers implement connected learning strategies in classrooms.

Keywords

Conectando Experiencias de Aprendizaje Dentro y Fuera de la Escuela: la Perspectiva del Alumnado

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Resumen

Este artículo presenta un estudio exploratorio sobre la importancia de las estrategias pedagógicas orientadas a establecer conexiones entre los aprendizajes de dentro y fuera de la escuela para el alumnado. El objetivo es doble: analizar la perspectiva de los estudiantes sobre estas estrategias en distintos tipos de escuela (en las que se personaliza en aprendizaje -PL- y en escuelas espejo), y analizar si existen distintas percepciones entre los estudiantes de tres escuelas PL que varían en cuanto al grado de implementación de este tipo de estrategias. Se ha aplicado la escala EPAE-A a una muestra de 3001 estudiantes (1481 de 5 escuelas PL y 1520 de 5 escuelas espejo) para determinar el valor que atribuyen los estudiantes a las estrategias que promueven las conexiones. Los resultados señalan un gran acuerdo en la importancia de este tipo de estrategias para el aprendizaje y la implicación en las actividades escolares. En los tres casos PL seleccionados se ha encontrado una cierta relación entre el número de estrategias implementadas y la frecuencia de las mismas percibida por el alumnado. Las conclusiones destacan algunos elementos que pueden ayudar al profesorado a promover estrategias de aprendizaje conectado en las aulas.

Palabras clave

Aprendizaje conectado, experiencias de aprendizaje, dentro y fuera de la escuela, personalización del aprendizaje, voz del estudiante

> Students in schools today are deeply alienated from the curriculum. For many students school presents an alternate reality that bears no obvious connection to the rest of their lives. (…) Far from helping students to understand the village in which they live, schools become microvillages in their own right, with their own typical activities that are only distantly related to those outside (Lemke, 2002, p. 43).

J ay Lemke's remark points to a major issue in the current society: the loss of personal meaning and value of school activities and content among a growing portion of students, especially during adolescence. In the case of Spain, the lack of student engagement is reflected in their high rates of school failure and dropping out. According to a survey conducted in Spain with students attending 4th year of secondary education (16 years old), close to 38% of respondents reported a poor feeling of happiness to go to school while over half (54%) reported little enjoyment of the subjects taught in school (Catalan Educational System Evaluation Council, 2020). So, the lack of engagement is also reflected in their poor interest in school learning.

However, the phenomenon of disengagement and loss of meaning in school is not an isolated fact that might respond to features of the Spanish educational system. It is observed in various countries and continents, such as Canada and the United States of America (Gallup, 2016). Educational research has found that teachers and families have growing concerns over the lack of student engagement in activities carried out in schools (Ito et al., 2020).

The origin of this phenomenon is related to multiple personal factors (cognitive, affective, relational, or motivational) and contextual factors (e.g. social and cultural features of school, family, and community). However, a good number of current authors emphasise that this phenomenon is closely related to the changes in the way of learning derived from the participation in the Information Society, or what is called the "new ecology of learning" (Barron, 2006). In this new ecology there is an increasing gap between what is learned inside the school and how students approach learning in non-formal settings, in which they develop their own personal learning pathways in response to their personal interests and needs (Ito et al., 2020).

Theoretical Framework: Connecting Student Learning Experiences in and out of School through Personalised Learning

Nowadays there is a great number of researchers studying the different contexts of activity (physical, virtual, or hybrid) that allow learning of students in the 21st century (Gilje & Erstad, 2017; Ito et al., 2020; Leander et al., 2010; Membrive et al., 2022). They agree that learning is much more than what is assessed and valued in school, so we also should consider all learning experiences that students develop outside the classroom, even in their families, communities, or social networks. Therefore, to promote learning it is necessary to consider students' personal learning trajectories, understood as the connection between the learning experiences that learners have in the different contexts of activity where they are participating, even inside or outside the school (Gilje & Erstad, 2017; Membrive et al., 2022).

However, students are not always able to establish connections between the learning that takes place in different educational contexts or practices in which they participate (Bronkhorst & Akkerman, 2016). This happens because their learning experiences do not depend solely on the approach taken in the activities, the educational agents, or the resources, tools and content involved; rather, they are ultimately determined by the subjectivity of the learner (Coll & Falsafi, 2010). Learning experiences are always subjective, because the learners live them in a particular way according to their reasons for taking part in the activity, their interests, their conceptions about learning, their views of themselves as learners, their expectations, and so forth. From this perspective, it is the continuity between students' learning experiences, that is the nature of the connections that can be forged between different learning experiences, rather than the activity contexts and times in which learning occurs (Engel & Membrive, 2018). Consequently, schools have a central role, as they are the main institutions that can promote and develop over time the necessary competencies ensure that students are developing rich personal learning trajectories that prepare them to meet the challenges of the twenty-first century (Coll, 2018).

Actions aimed at helping students connect different learning experiences that occur in different contexts are central to pedagogical approaches focused on learning personalisation. From a constructivist and sociocultural approach, which is adopted in this paper, personalised learning (PL) refers to a set of educational practices that: (a) value student voice; (b) promote the active participation of learners in school according to their needs, personal objectives and interests, and (c) encourage and recognise the learner's ability to make decisions about their learning process (Bray & McClaskey, 2015). They are educational practices whose ultimate purpose is to increase the meaning and personal value of students' learning experiences (Coll, 2018).

A Brief Review of Learning Across Different Contexts

This section provides an overview of four recent empirical studies all of them framed within a sociocultural, historical/cultural, social constructivist, or situated approaches (Vygotsky, 1978; Wertsch, 1991), which seek to formulate and analyse pedagogical proposals aimed at bridging the educational contexts, students' learning experiences, and analyse its consequences for learning (Bronkhorst & Akkerman, 2016).

An initial example of these proposals relates to the so-called seamless learning (Looi et al., 2019), which occurs "when a person experiences a continuity of learning, and consciously bridges the multifaceted learning efforts, across a combination of locations (such as in and out of classroom), times, technologies or social settings." (Wong et al., 2021, p. 269). The proposed activities aim to ensure that the skills or meanings learned in the classroom can later be analysed, enriched, reused and/or "remixed" in other out-of-school learning spaces. Conversely, what is learned in other learning spaces can be given new meanings in classroom with the support of mobile devices. Wong et al. (2021) pointed at different strategies such as in-class meaningful, contextualised explicit instructions by teachers, observations of learning by doing in authentic settings, students' linguistic competencies, collaborative problem-solving competency, and self-directedness in learning. For example, they propose activities such as

identifying and photographing the geometric shapes that they are working on in class on the buildings, traffic signs, and street furniture they find on their way home from school with their own mobile devices.

A second example relates to contextualising instruction (Silseth & Erstad, 2022), which sets out to support the comprehension of curriculum content using situations or events that occur outside of school or that are of special interest to students. Many studies suggested different strategies to foster students' motivation and engagement in class using artefacts such as current news, information that students identified as important and meaningful to themselves or in their everyday lives among many others. Those artefacts must be genuinely relevant for students to motivate and guide the presentation of the school curriculum. In addition, these studies show that when a teacher frames academic tasks in everyday and informal contexts, both teacher and students struggle to negotiate accountable ways of engaging in the new practice (Wiig et al., 2019). For example, they ask students to complete a survey to find out their interests regarding the activities they usually do outside of school (such as music, art, games, movies or sports, among others), and teachers design for each student algebra problems based on their previously declared interests.

A third approach is called Connected Learning, which aims to create learning environments that allow students to pursue their interests with the support of friends and close adults, as well as to connect students' learning and personal interest with academic achievement, professional success, and civil commitment. Ito et al. (2020) summarise a decade of collative work with Connected Learning Research Network scholars and state the challenges and opportunities for connected learning. For example, schools involve local entities to develop projects together to explore problems that affect the community such as health, pollution, homeless people, among many others. These studies show positive effects in students' engagement, motivation and cooperation with others have been clearly documented. However, new research needs to expand the data collection to a wide group of youth and involve stakeholders and other social agents.

A final group of approaches, grouped under the name of funds of knowledge or FoK, seek to turn the knowledge of immigrant families into educational resources linked to school activities to enhance the schooling experience of ethnic minority children (Moll et al., 2013). Other authors highlight the positive impact of FoK on students' identity, what is called Funds of Identity (FoI), and recommend different activities to foster the recognition and value of cultural diversity in class (Esteban-Guitart, 2016). For example, they design activities in which students have to explain to their classmates the way in which birthdays are celebrated in their families and bring to class an object related to this celebration, as a way of making their own cultures known in class. However, Hogg and Volman (2020), in their review of empirical studies that have made use of the FoI approach and its relationship to FoK, found that most studies focus on the analysis of program design, and very few studies present the results of its impact on students' learning.

In our opinion, most of the reviewed studies are single case studies that implemented certain pedagogical strategies in the classroom and analyse the learning acquired by students. Those studies, as well as others carried out within the same framework such as Boundary Crossing (Chisari et al., 2023), Third Space Learning (Berman, 2020), or The Fifth Dimension (Nocon, 2020) approaches, point to the need of more systematic research and at the highest scale to

deepen in the comprehension of connecting learning strategies (Bronkhorst & Akkerman, 2016). In addition, some authors (DeMink-Carthew & Olofson, 2020) state the need to focus on student perceptions, to study the reasons they perceive as core elements to foster their meaning and engagement in class in such pedagogical strategies. Aligned with these ideas, we aim to analyse students' views regarding the value of connecting in and out of school learning experiences in personalised learning practices aimed to promote these connections. We believe that our study can shed light to specific elements that can help design more powerful learning environments.

Focus of the Research and Objectives

This paper engages in an exploratory analysis designed to investigate students' views about the importance of personalisation strategies that foster the development of connections between their learning and/or their learning experiences in and out of school. The aim of the study is twofold:

(1) To identify the main differences between students' views in schools that personalise learning (PL schools) and those of students in schools that do not personalise learning (mirror schools), by looking at: (a) the frequency that students perceive that they take part in teaching and learning activities aimed at promoting connections between learning and/or learning experiences in and out of school; and (b) the perceived importance that these activities have for learning.

(2) To identify the main differences in the analysis of students' views in three selected PL schools that implement different degrees of strategies aimed at making connections between students' learning and/or their learning experiences, by looking at: (a) the frequency that students perceive that they take part in activities of this sort; and (b) the perceived importance of these activities for learning.

Materials and Methods

General Research Design

We used a multi-method approach to data collection and analysis. For the first approach, we used a questionnaire to explore student perceptions of different strategies to promote connections between students' learning and/or their learning experiences in schools, and the subsequent statistical analysis of their responses (Coll et al., 2022). The second approach consisted in an exploratory study of multiple cases (Yin, 2017), where each case involved a learning personalisation practice implemented by a high school. Multiple case studies included the analysis of classroom observations, school documents and participant interviews.

According to the objectives of this paper, we will focus on the analysis of students' responses in the questionnaire.

Participants

To achieve the goals of this study, we have identified five schools (three high-schools and two elementary schools) that implement personalization practices for school learning (PL schools). We have reviewed the information of their websites and their educational projects to ensure they were applying different personalisation strategies. For each PL school we selected a 'mirror school'. Each mirror school shared the same features as their peer PL school in terms of four dimensions: (a) educational level (primary or secondary); (b) school size (in terms of total students and teachers); (c) socioeconomic status of the students' families; and (d) geographical location of schools. However, mirror schools differ from its peer PL school because it does not implement personalised learning strategies. The sample of the study were 3001 students between 12 and 16 years-old, 1481 of which were schooled in personalised learning initiatives (PL schools) and the rest 1520 were schooled in non-personalised learning initiatives (Mirror schools). Table 1 shows the sample features.

Table 1
Sample Features

Type of school	N	Gender			Course of secondary education			
		men	women	non binary	1st	2nd	3rd	4th
PL schools	1481	769	687	15	460	340	373	308
Mirror schools	1520	720	782	18	366	447	375	332
Total	3001	1489	1479	33	826	787	748	640

For the second objective, we selected three public PL high schools (the other two were elementary schools) which specifically implemented connecting learning strategies according to different levels of intensity: from a minimal presence to a hard presence of such strategies. We explore three core elements of connecting learning: (a) the learning activities designed to connect students' learning and/or their learning experiences across different contexts; (b) the educational agents that enhance these connections; (c) and the mediating tools used (for more details see Oller et al., 2021).

Case A is a PL high school that has 214 students between 12-16 years, and 25 teachers. Its educational project uses personalised learning plans as a core element of their pedagogy, considering students' interests and their personal objectives to implement school activities. According to their learning objectives, students can choose different subjects throughout the school year, developing their own personal learning path. In this school, the collection data included all students.

Case B is a PL school that has 465 students between 12-16 years, and 58 teachers. Students attending the first year of secondary school (90 students between 12-13 years) participate in a project all around the year that starts with a gymkhana outside the school with other groups of students from different schools from the city. The aim of the gymkhana is to allow students to get to know the surroundings of the city and become more involved in the neighbourhood of

the school. It also wants to promote students' learning of academic content and abilities using mobile devices and peer cooperation, while exploring the close environment.

Case C is a PL high school that has 572 students and 48 teachers. The main methodology for teaching is project-based learning, which occupies almost 40% of the school day, and it is developed in collaboration with local entities or associations. In this centre, the collection data included 355 students from the third and fourth course of compulsory secondary education (15-16 years old).

According to the analysis made by Oller et al. (2021), the three selected cases develop personalised learning activities that foster in and out of school learning by using active methodologies that promote student voice and choice, and the use of educational resources from the nearby surroundings of learners (e.g., activities based on solving authentic problems, related to students' interests, or promoted by local entities). However, only in Case A we found the development of activities aiming to connect personal objectives and personal experiences from the learners with school contents, and the participation of educational agents from the global community (e.g. students from other countries).

In all three cases, there is also a wide use of different tools and resources to promote the establishment of connections between the learning and/or the students' learning experiences in and out-of-school. However, the presence and frequency of such tools and resources is different in all three cases. Case A is the best in terms of the number of connecting learning activities that developed, and in their frequency and diversity, this is, has a high presence of connecting learning strategies. Case C is in second position, and it's closely followed by case B, both with a medium presence of connected learning strategies. Figure 1 shows the main results of Oller et al. (2021) analysis of the three schools in terms of number and diversity of connecting learning strategies.

Figure 1

Features of Personalised Learning Activities and Content that Promote Connections Between Students' Learning and/or Learning Experiences
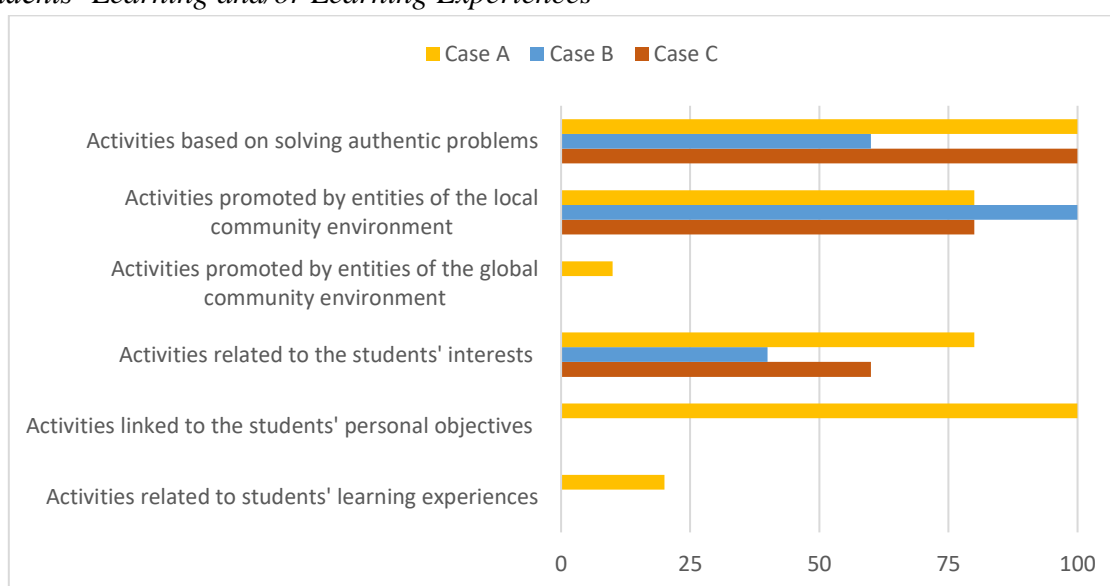
Note. Adapted from Oller et al., 2021, p. 412.

Instruments

EPAE-A questionnaire to explore student views of personalised learning.
The starting point for the construction of the questionnaire was a typology of pedagogical actions and strategies that, according to the literature review, promote the attainment of school learning that has personal meaning and value for students (Coll, 2018). In detail, the EPAE-A questionnaire (Coll et al., 2022) has two main subscales: a frequency subscale conformed by one dimension called 'frequency' which include ten items; and an agreement subscale conformed by four dimensions, which include 24 items, 8 related to each dimension. Those four dimensions were named as: (a) "decision and control over the learning process"; (b) "activities with an experiential basis"; (c) "connections between learning experiences"; and (d) "reflection of oneself as learner and on the learning process". In this paper, we only present the results of the third factor of the questionnaire, that aims to study the personalisation strategy named "connection between students' learning and/or their learning experiences", which include 5 items in the frequency subscale and 7 items in the agreement subscale. The questionnaire uses a 5-point Likert scale. In the frequency subscale, the response categories range from a gradient of 1=never, 2=seldom, 3=sometimes, 4=usually, and 5= always. In contrast, in the agreement subscale the response categories were: 1= completely disagree, 2=disagree, 3=neither agree nor disagree, 4= agree, and 5= totally agree.

For the validation of the EPAE-A tool, we drew on a group of experts in personalised learning to validate the items and we conducted two preliminary pilot studies involving 507 and 1,411 students, respectively, to ensure that the items were understood and to test the usability of the online test. The results provide solid evidence of the validity of the questionnaire's internal structure and of its reliability, as they range between $\alpha=0.874$ (Cronbach alpha) and $\omega=0.894$ (McDonald omega) for the frequency subscale, and between $\alpha= 0.861$ and de $\omega= 0.872$ for the agreement subscale. More details of the questionnaire are presented in Coll et al. (2022).

Data Analysis

To analyse the student responses to the EPAE-A questionnaire according to the two groups of schools (PL and Mirror schools), we have used descriptive analysis and inferential analysis with SPSS. Since the variables do not follow a normal distribution between the groups, we have used non-parametric tests (Mann-Whitney U test). In addition, to analyse whether differences are found in the results among the three selected PL cases, we have used descriptive analysis and the Kruskal-Wallis test. The significance was set at $p<0.05$.

As non-significant differences are found between boys, girls and non-binary students, we do not present data regarding this variable.

Results

First, we contrast the EPAE-A results with the total sample of participants to see whether there are differences in their views about connected learning strategies according to the kind of

school (PL schools or mirror schools). Second, we compare the results of the same questionnaire among the three selected PL schools, to see if there are any differences in students' responses according to the degree of implementation of pedagogical strategies oriented to foster connections between in and out of school learning.

Results of the EPAE-A Contrasting PL Schools and Mirror Schools

This section compares the results of the entire set of schools that apply personalised learning strategies (PL schools) with the results of the entire mirror schools, which do not implement personalised learning strategies. The aim is to identify whether the views of students attending PL schools coincide (or not) with those of the mirror schools. We initially expect that PL schools will obtain higher scores than mirror schools in both subscales, as they are schools in which teachers are more sensitive to the need of connecting students' learning in and out of school.

We first present an analysis of student responses to the frequency items on the EPAE-A questionnaire (see Table 2), and then we present the analysis of the agreement items (see Table 3). In both cases, we show the significant differences between the means of the groups for each item.

Table 2

Average Results Obtained by Students in the Frequency Subscale Items

	PL schools		Mirror schools		Comparison of averages	
	$\bar{x}$	SD	$\bar{x}$	SD	U	*p*
1.1. In school, we learn things that are more important for our future than what we learn in other places	3.57	1.02	3.51	1.05	0.001	.991
1.2. What I learn in school is useful for what I typically do in other places	3.18	1.02	3.03	1.04	16.836	.001*
1.3. The topics that we see in class are related to what I typically do outside of school	2.68	1.03	2.48	1.00	22.461	.001*
1.4. My teachers ask me about my interests in learning and consider them in classroom activities	2.41	1.16	2.18	1.12	109.714	.001*
1.5. My teachers ask me about what I learn outside of school	2.03	1.03	1.86	0.99	58.908	.001*

* Statistically significant differences at a level of .05

Mean scores in the frequency subscale items (Table 2) follow the same rank order for students in both groups. In items 1.1 and 1.2, related to the importance and usefulness of school learning, means range between 3 and 3.5 points. In items 1.3 and 1.4, related to the relationship between the contents learned at school and students' out-of-school experiences and the inclusion of their interests in class, means range between 2 and 2.7 points. Item 1.5 obtains the worst score on the Likert scale, ranging from 2 to 1.8, indicating that students perceive very few moments to explore their learning experiences outside of school.

Regarding the differences between groups, as expected, students at PL schools have higher scores than students attending mirror schools in all items of frequency except for item 1.1. Students attribute higher importance to school learning for their future (the highest score on the frequency subscale). However, students from PL schools state a greater relationship between the contents and activities developed in classrooms and what they learn outside the school, and more applicability of what is learned at school. In addition, they perceive a greater recognition of their interests in school activities.

Table 3

Average Results Obtained by Students in the Agreement Subscale

	PL schools		Mirror schools		Comparison of averages	
	$\bar{x}$	SD	$\bar{x}$	SD	U	*p*
2.1. I am motivated and engaged when classroom activities are related with topics of my interest	4.38	0.87	4.50	0.81	4.559	.001*
2.2. I learn more when classroom activities are related with topics of my interest	4.28	0.92	4.40	0.90	4.725	.001*
2.3. I get more involved and motivated in classroom activities when we work on topics that are related with activities I do outside the school	3.79	0.94	3.84	0.93	2.894	.081
2.4. It is easy to understand and learn academic contents that are related with other contents and activities I learn outside the school	3.75	0.97	3.80	0.96	0.158	.660
2.5. I like when my teachers help me to connect things that I have learned in other places (at home, with friends, in	3.66	0.99	3.75	0.99	6.242	.011*

	PL schools		Mirror schools		Comparison of averages	
	x̄	SD	x̄	SD	U	p
extracurricular activities, etc.) with classroom activities or tasks						
2.6. I try to connect what I have learned in other places (at home, with friends, in extracurricular activities, etc.) with what I do in class	3.55	1.02	3.60	1.00	0.485	.486
2.7. For me, it is more important what I learn outside the school than what I learn at school	2.84	1.00	2.79	1.00	2.561	.110

* Statistically significant differences at a level of .05

In the agreement subscale (Table 3), where items are related to the impact of connected learning strategies on their own learning, mean scores are notably higher than those of Table 2, with values between 3.5 and 4.5 in the Likert scale in six of the seven items. In this case, unlike what occurs in the frequency subscale, mean scores are slightly higher for students from mirror schools in all items except for the last, which falls below 3 points.

Statistically significant differences are found in only three items (2.1, 2.2 and 2.5). In this sense, all students -regardless of the group to which they belong- recognise the importance of in-and-out-of-school connections to foster learning. However, unexpectedly, students from mirror schools are those who express greater relevance of connecting teaching and learning activities at school with their own interests for learning (items 2.1 and 2.2), and those who express more satisfaction when teachers help them connect school learning with what they learn in other contexts (item 2.5).

Results from the EPAE-A Questionnaire in the Three Selected Cases

This section presents the questionnaire results for students in the three selected PL schools (case A, B and C) where we have previously conducted an in-depth analysis of practices aimed at connecting students' learning at school with other learning experiences that have taken part in other activity contexts outside the school. We try to connect the features of the educational practices implemented in each of those particular high schools with the perceptions of students obtained in the EPAE-A questionnaire. We initially expected that case A would obtain better results in both subscales of the questionnaire according to the highest diversity and frequency of connected learning activities in this school compared to those of case B and C (see Figure 1).

As in the previous section, we start presenting the results of the frequency subscale (see table 4), and then the results of the agreement subscale (see table 5).

Table 4

Average Results Obtained by Students of the Three Selected Cases in the Frequency Subscale

	Case A		Case B		Case C		Comparison of averages	
	x̄	SD	x̄	SD	x̄	SD	K-W	*p*
1.1. In school, we learn things that are more important for our future than what we learn in other places	3.42	0.91	3.87	1.01	3.55	0.93	6.973	.001*
1.2. What I learn in school is useful for what I typically do in other places	3.03	0.96	3.28	1.17	3.23	0.98	3.181	.042*
1.3. The topics that we work on in class are related to what I typically do outside of school	2.69	0.95	2.66	1.20	2.68	1.01	0.042	.959
1.4. My teachers ask me about my interests in learning and consider them in classroom activities	2.88	1.06	2.08	1.18	2.40	1.08	21.010	.001*
1.5. My teachers ask me about what I learn outside of school	2.26	1.07	1.79	0.99	1.89	0.98	10.727	.001*

* Statistically significant differences at a level of .05

Unexpectedly, students attending the three selected schools perceive a low presence of connecting learning activities in their classrooms, as their means range from 2 to 3 points in the subscale.

The average scores in the frequency subscale items show significant differences among all items except for item 1.3, where means are similar in the three selected cases. In items 1.1 and 1.2, related to the importance and usefulness of school learning, students from cases B and C are those who obtain better scores. In particular, for item 1.1, differences between case B and A are: I-J=0.45, p<.001; between case B and C are: I-J=0.32, p<.018; and between case C and A are: I-J=0.13, p<0.4. For item 1.2, differences between cases B and A are: I-J=0.25, p<.024; and between case C and A are: I-J=0.20, p<.024. Unexpectedly, students from case A, which is the best in terms of the number of connecting learning activities developed and, in their frequency and diversity, obtain significantly lower scores in item 1.1 and item 1.2.

In contrast, as we expected, students from case A obtain greater scores in items 1.4 and 1.5, both related with specific actions of teachers addressed to know what students learn outside of school. Specifically, case A students perceive a higher frequency of school activities that consider their personal interests (in item 1.4, the differences between case A and B are: I-J= 0.80, p<.001; and between case ONE and THREE are: I-J= 0.48, p<.001). In addition, case A

students perceive much more questions addressed by their teachers regarding what they are learning outside the classroom (in item 1.5, differences between case A and B are: I-J=0.47, p<.001; and between case A and C are: I-J=0.37, p<.001. In those items, there is an alignment between the educational practices observed and the perception of students in all cases.

Table 5

Average Results Obtained by Students of the Three Selected Cases in the Agreement Subscale

	Case A		Case B		Case C		Comparison of averages	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	K-W	*p*
2.1. I am motivated and engaged when classroom activities are related with topics of my interest	4.27	0.85	4.10	1.17	4.43	0.85	5.437	.005*
2.2. I learn more when classroom activities are related with topics of my interest	4.18	0.85	3.99	1.11	4.32	0.88	5.153	.006*
2.3. I get more involved and motivated in classroom activities when we work on topics that are related with activities I do outside the school	3.67	0.93	3.59	1.15	3.81	0.88	2.706	.068
2.4. It is easy to understand and learn academic contents that are related with other contents and activities I learn outside the school	3.75	0.86	3.41	1.10	3.74	0.97	4.640	.010*
2.5. I like when my teachers help me to connect things that I have learned in other places (at home, with friends, in extracurricular activities, etc.) with classroom activities or tasks	3.48	0.95	3.68	1.13	3.61	0.99	1.556	.212
2.6. I try to connect what I have learned in other places (at home, with friends, in extracurricular activities, etc.) with what I do in class	3.51	0.94	3.37	1.16	3.57	1.00	1.484	.227
2.7. For me, it is more important what I learn outside the school than what I learn at school	2.93	0.90	2.78	1.12	2.86	0.87	0.924	.397

* Statistically significant differences at a level of .05

In the agreement subscale the means have scores between 3.5 and 4.4 in all items except in item 2.7, that are little below 3 points. These results highlight the importance that students place on personalisation strategies aimed to bridging students' learning and/or their learning experiences in and out of school. In all cases, the lower scores are obtained in item 2.7, showing that students do not completely agree with the fact that what they learn outside the school is more important than what they learn at school (means range between 2.7 and 2.9 points).

Attending to the statistical differences observed, only items 2.1, 2.2 and 2.4 show significant differences among the three selected cases. It seems that all students -regardless of the case study- get more motivated and engaged in school activities when they can build bridges between these activities and what they are doing outside the school (item 2.3), when teachers make explicit such connections (item 2.5), or when they try to connect in-and-out-of-school learning experiences (item 2.6). In contrast, students from case C are those who obtain higher scores in items 2.1 and 2.2, both related to the importance of working with student interests in classroom activities to encourage their engagement and learning. Specifically, for item 2.1, differences are observed between cases C and A (I-J=0.16; $p<.009$), and between case C and B (I-J=0.33; $p<.003$). For item 2.2, differences are also observed between case C and A (I-J=0.14; $p<.009$), and between case C and B (I-J=0.33; $p<.001$). In addition, differences are observed in item 2.4, referring to an increasement of the school learning when the tasks are linked to different activities developed outside of school by students. In this case, students attending schools A and C obtain higher scores than students from case B (differences between case A and B are: I-J=0.34, $p<.020$; and between case C and B are: I-J=0.33, $p<.018$).

The results obtained in the agreement subscale are partially coincident with the analysis made about the personalised learning activities that foster in and out of school learning in the three selected cases. On the one hand, we see that all students agree in the importance attributed to the strategies that foster connected learning, as no differences are found between means in items 2.3, 2.5, 2.6., and also the mean scores are in the highest part of the Likert scale. On the other hand, students from case B obtain the worst results in items 2.1 and 2.2, related to activities that link students' interests with specific tasks in class, which is in line with the lower presence of this strategy in our previous analysis. However, unexpectedly, even those our previous study point at case A as the best in the number and variety of personalised strategies, the results show that the mean scores of this high school in items 1.1 and 1.2 are significantly lower than those of case C. Moreover, it is also surprising that in our previous analysis (see Figure 1) we had identified case B as having many activities in school promoted by local entities, whereas there is a low agreement among these students (compared with the other selected cases) in item 2.4, related to the fact that it is easier to learn academic contents when they are related with contents or activities that have social and cultural relevance for students (item 2.4).

Discussion

According to the first objective, we have found statistically significant differences between the views of students enrolled in PL schools and those of mirror schools in relation to their perception of the frequency of implementation of pedagogical strategies aimed at connecting

in and out-of-school learning (see Table 2). The perceived frequency of these activities is higher in students from PL schools. However, it is stroking that means are low, with scores that are located under the cut-off point of the Likert scale. These results are in line with other studies that point to the need for teachers to explore what students know explicitly asking them in which activity contexts and when did they achieve this learning (Silseth & Erstad, 2022; Wiig et al., 2019).

All students, regardless of the type of school, agree in the positive view of the impact that strategies aimed at connecting in and out of school learning have on their commitment, effort and learning at school (Table 3 shows that the mean scores reach values in the upper part of the scale). In this case, unlike what happened in the frequency subscale, the average scores are slightly higher for students attending mirror schools in most of the items. This outcome highlights the importance that students that are not attending PL schools are giving to personalisation strategies for school learning. In particular, strategies that are statistically significant are: working with their interests (items 2.1 and 2.2) and connecting school activities with students' out-of-school experiences (item 2.5). In our opinion, the higher scores in the agreement subscale of all students -regardless their exposition of such personalised practices - point at the need to rethink school activities, introducing personalisation strategies that foster students' improvement of their attribution of meaning and personal value to school activities and/or contents. These changes are particularly relevant in compulsory secondary education, where the danger for students to drop out of the educational system is higher (Gallup, 2016).

Our results are in line with other studies that point at the increasing importance of out-of-school learning for youth (Ito et al., 2020), where students can construct their own personal learning pathways in response to their personal interests and needs. A second result to highlight is the high degree of agreement shown by the students with the statements that underline the relevant role of interests for their motivation, commitment, and learning. The importance of working with students' interests in classrooms is seen as very relevant to fostering students' engagement and developing their meaning making to school activities and learning (Ito et al., 2020).

Turning now to the second objective, we have compared the responses of students attending three PL selected cases with different degrees of implementation of personalisation strategies aimed at fostering the connections between what is learned in and out of school. In general, the students of the three cases perceive that these types of strategies are not very frequent in their schools (they are located at the midpoint of the scale). We expected that students from case A would obtain better results on the EPAE-A scale, in line with our previous study (Oller et al., 2021) which have identified more diversity and frequency of specific strategies aimed at connecting student learning inside and outside the school, compared to cases B and C. However, this hypothesis has not been fully met.

On the one hand, we found a certain alignment between the practices observed in case A and the perception of frequency of specific practices aimed to connect in and out of school learning in contrast to the students from the other cases. They perceive a greater frequency of school activities that consider their personal interests and more questions from their teachers to know about what they are learning outside of school. However, on the other hand, we found a higher perception of the frequency with which school learning is useful outside of school, and the importance of working on academic content for their future, in cases B and C. In our

interpretation, these results are aligned with those obtained by Ito et al. (2020). According to these authors, merely placing students at the centre of the teaching and learning process, or to link educational practices to their interests and cultures is insufficient. It is necessary to consider the relationship between the community and other learning environments, such as home, as also emphasised by FoK approaches (Esteban-Guitart, 2016; Moll et al., 2013). In this sense, it is important for students to work with other members of the community to address and solve key problems in the community and disseminate their findings to policy makers and other interested parties.

We find some similarities and discrepancies in the comparison between the three selected PL high schools regarding the analysis of activities that support learning both inside and outside the school. Regarding the similarities, we can highlight the widespread agreement among the students of the three cases on the importance that pedagogical strategies aimed at connecting learning inside and outside the school have for learning (see Table 5). In addition, students also show a broad agreement in giving the highest scores to statements that highlight their interests as a substantial part of those connections. Although we found statistically significant differences in their opinions, all responses still fell within the highest range of the scale.

Among the discrepancies, we found that the students from case A scored significantly lower on items referring to their engagement and learning in activities oriented by their own interests compared with those of case C, despite the fact that in our previous analysis case A was the best in number and variety of this type of personalisation strategies. Students from case B score lower than those of the other cases in the statement that it is easy to learn school contents when they are related to other contents that have social and cultural relevance for them. This finding contrasts with the previous analysis of personalisation strategies in this school, as we have identified a high number of school activities promoted by local entities in case B. These results are coincident with those of Silseth and Erstad (2022) and show that it is difficult for students to become aware of the relationships that teachers try to establish between school content and the activities they carry out outside of school.

Conclusions

The results of our study show the importance of considering the student perspective in relation to the strategies used in schools to bridge students' learning and/or their learning experiences in and out of school (DeMink-Carthew & Olofson, 2020). From our viewpoint, grounded in constructivist and sociocultural principles (Vygotsky, 1978; Wertsch, 1991), it is the learner's personal learning pathway (the set of their previous experiences and the relationships between them) that determine whether they give or not personal meaning and value to any new learning activity that is proposed in the classroom. Subsequently, the personal meaning and value students attribute to new content and learning situations influence their eagerness to learn and their engagement in the learning process (Coll, 2018). Thus, it is imperative to foster actions or strategies in schools that seek to accompany and support students as they navigate through various activity contexts that provide them with learning experiences. This involves integrating these experiences into school activities and encouraging students to reflect on their personal learning pathways, as well as their revise and enrich them (Membrive et al., 2022).

The educational implications of our results reinforce the conclusions of the previous studies by highlighting the importance for teachers to implement different types of activities focused on the personal trajectories of students as one way to personalise learning, considering their interests and personal choices to foster meaningful learning. Teachers should design activities that promote student reflections about their learning experiences, even within or outside the school, teachers can ask students where they have learned previous knowledge (Esteban-Guitart, 2016). A second type of activities could focus on assisting students in reflecting on their learning process (e.g. what features of the situations have make learning easier or more difficult), and how they approach learning (what emotions arouse) in different contexts (Silsteth & Erstad, 2022). A third type of activities could focus on promoting the resignification at school of what has been learned in other learning contexts, and encouraging the "reuse" of knowledge gained in the classroom across different learning environments (Looi et al., 2019). However, it is not enough to design instructional activities considering students' realities, it is also necessary to make explicit which connections between contexts and activities are appearing, and to encourage students to reflect on them (Oller et al., 2021). A fourth type of activities could be oriented to reflect explicitly on the personal learning trajectories that students are building, e.g. reflecting on the learning opportunities available to them, how they are taking advantage of them, and where they can find new opportunities (Engel & Membrive, 2018). And a last type of activities could be aimed at designing projects in collaboration with educational agents from other contexts of the community close to the students that offer students learning opportunities (Bronkhorst & Akkerman, 2016; Ito et al., 2020) or with families (Esteban-Guitart, 2016; Silseth & Erstad, 2022).

Finally, there are several aspects of our findings that need further investigation. Firstly, while the use of questionnaires has provided a broad understanding of students' opinions and perceptions, supplementing these data with in-depth interviews and classroom observations would offer richer insights. Interviews could contribute to exploring how students develop and construct their personal learning pathways according to the features of their subjective learning experiences in different settings and contexts, while classroom observations could analyse the discursive strategies and resources that teachers use to create spaces for dialog and reflection about the connections between in and out of school learning. Secondly, given the significance of interests in fostering meaningful learning, future research should prioritise the identification, origin, and development of these interests across different contexts (Bronkhorst & Akkerman, 2016). Thirdly, it is also necessary to investigate how teachers can effectively implement connected learning strategies and help students gain greater initiative to trace their personal learning trajectories in connection with their needs and personal goals (Membrive et al., 2022). Addressing these challenges will undoubtedly aid in addressing the issue of student disengagement and loss of meaning in school.

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References

Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A learning ecology perspective. *Human Development, 494*, 193-224. https://doi.org/10.1159/000094368

Berman, N. (2020). A critical examination of informal learning spaces. *Higher Education Research & Development, 39*(1), 127-140. https://doi.org/10.1080/07294360.2019.1670147

Bray, B., & McClaskey, K. (2015). *Making learning personal.* Corwin.

Bronkhorst, L. H., & Akkerman, S. F. (2016). At the boundary of school: Continuity and discontinuity in learning across contexts. *Educational Research Review, 19*, 18-35. https://doi.org/10.1016/j.edurev.2016.04.001

Catalan Educational System Evaluation Council (2020). *Analysis of the context from students of 4th course of Secondary Compulsory Education. Academic year 2018-2019*. [Anàlisi del context de l'alumnat de quart d'ES0. Curs 2018-2019]. Generalitat de Catalunya. https://repositori.educacio.gencat.cat/bitstream/handle/20.500.12694/265/analisi_del_context_de_l_alumnat_de_quart_d_eso_curs_2018_2019_2020?sequence=1&isAllowed=y

Chisari, L. B., Bakker, A., & Akkerman, S. F. (2023). Seeing and seeking relevance in the challenges of a STEM school–university partnership. *International Journal of Science Education, Part B, 13*(2), 99-115.https://doi.org/10.1080/21548455.2022.2123723

Coll, C. (2018). Learning processes that generate learning with personal value and strategies for personalizing school learning. [Procesos de aprendizaje generadores de sentido y estrategias de personalización.] In C. Coll (Coord.), *Personalización del aprendizaje* (pp. 14-18).   Graó. http://psyed.edu.es/archivos/grintie/Coll_2018_LearningProcessesThatGenerateMeaning.pdf

Coll, C., & Falsafi, L. (2010). Learner identity. An educational and analytical tool. *Revista de Educación, 353*, 211-23. http://hdl.handle.net/11162/79901

Coll, C., Fauré, J., & Arriazu, R. (2022). Primary and secondary students' views of learning personalisation: construction and validation of a scale. *Revista de Educación, 39*5, 265-290. https://doi.org/10.4438/1988-592X-RE-2022-395-514

DeMink-Carthew, J., & Olofson, M. W. (2020). Hands-joined learning as a framework for personalizing project-based learning in a middle grades' classroom: An exploratory study. *RMLE Online, 432*, 1-17. https://doi.org/10.1080/19404476.2019.1709776

Engel, A., & Membrive, A. (2018). Contextos de actividad, experiencias de aprendizaje y trayectorias personales. La articulación de los aprendizajes escolares y no escolares [Activity contexts, learning experiences and personal trajectories. The articulation of school and non-school learning]. Dossier Graó, 3, 19-22.

Esteban-Guitart, M. (2016). *Funds of identity: Connecting meaningful learning experiences in and out of school*. Cambridge University Press.

Gallup. (2016). *Gallup® student poll: A snapshot of results and findings.* https://cutt.ly/Fhis9SY

Gilje, Ø., & Erstad, O. (2017). Authenticity, agency and enterprise education studying learning in and out of school. *International Journal of Educational Research, 84*, 58-67. https://doi.org/10.1016/j.ijer.2016.05.012

Hogg, L., & Volman, M. (2020). A synthesis of funds of identity research: Purposes, tools, pedagogical approaches, and outcomes. *Review of Educational Research, 906*, 862-895. https://doi.org/10.3102/0034654320964205

Ito, M., Arum, R., Conley, D., Gutiérrez, K., Kirshner, B., Livingstone, S. (2020). *The Connected Learning Research Network: Reflections on a Decade of Engaged Scholarship.* Connected Learning Alliance https://clalliance.org/publications

Leander, K. M., Phillips, N. C., & Taylor, K. H. (2010). The changing social spaces of learning: Mapping new mobilities. *Review of Research in Education, 34*(1), 329-394. https://doi.org/10.3102/0091732X09358129

Lemke, J. (2002). Becoming the Village: Education across Lives. In G. Wells & G. Claxton (Ed.) *Learning for Life in the 21st Century: Sociocultural Perspectives on The Future of Education* (pp. 34-45). Blackwell.

Looi, C-K., Wong, L-H., Glahn, C., & Cai, S. Eds. (2019). *Seamless Learning. Perspectives, Challenges and Opportunities*. Springer.

Membrive, A., Silva, N., Rochera, M.J., & Merino, I. (2022). Advancing the conceptualization of learning trajectories: A review of learning across contexts. *Learning, Culture and Social Interaction, 37,* 100658. https://doi.org/10.1016/j.lcsi.2022.100658

Moll, L. C., Soto-Santiago, S. L., & Schwartz, L. (2013). Funds of knowledge in changing communities. In K. Hall, T. Kremin, B. Comber, & L. Moll, *International handbook of research on children's literacy, learning, and culture* (pp. 172-183). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118323342.ch13

Nocon, H. (2020). The Fifth Dimension play and learning environment: prototype to practice. *Mind,   Culture,   and   Activity,   27*(2),   122-131. https://doi.org/10.1080/10749039.2020.1716257

Oller, J., Engel, A., & Rochera, J.M. (2021). Personalizing learning through connecting students 'learning experiences: an exploratory study. *The Journal of Educational Research*, *114*(4), 1-14. https://doi.org/10.1080/00220671.2021.1960255

Silseth, K., & Erstad, O. (2022). Exploring opportunities, complexities, and tensions when invoking students' everyday experiences as resources in educational activities. *Teaching and Teacher Education, 112*, 103633. https://doi.org/10.1016/j.tate.2022.103633

Vygotsky, L. S. (1978). Socio-cultural theory. *Mind in Society, 6*, 52-58.

Wertsch, J.V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Harvard University Press.

Wiig, C., Wittek, A. L., & Erstad, O. (2019). Teachers, tools and accountable practices. Engaging with a wiki blog as a learning resource. *Learning, Culture and Social Interaction, 22,* 100245. https://doi.org/10.1016/j.lcsi.2018.07.001

Wong, LH., Looi, CK., & Aw, G.P. (2021). Does Seamless Learning Translate Seamlessly? A Decade of Experiences in Adapting Seamless Learning Designs for Various Subjects, Levels and Technological Settings. In E.R. Koh, & D.W.L. Hung (eds), *Scaling up ICT-based Innovations in Schools* (pp 269–289). Springer. https://doi.10.1007/978-981-16-4469-6_14

Yin, R. K. (2017). *Case study research and applications: Design and methods*. Sage Publications.