

Article

Supporting the Transition to Higher Education: Finnish Principals' Views on Opportunities and Challenges of Institutional Cooperation

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Abstract: The transition from upper secondary school to higher education is a major change in students' lives. Supporting students to make informed decisions based on a realistic view of higher education is one of the key elements to ensuring their motivation in future studies. Cooperation between upper secondary and higher education is one model for providing students with realistic views. However, little research has been produced from this cooperation. Therefore, the aim of this paper, based on mixed-method research, is to produce new insights into the opportunities provided by institutional cooperation by analyzing the views of Finnish upper secondary school principals (N = 94). The data were gathered using an online survey and analyzed via qualitative content analysis and descriptive statistics. The results indicate that principals consider cooperation with higher education institutions to be beneficial but there are some challenges in its implementation, such as the different structures of upper secondary schools and universities and inadequate information about possible opportunities. There are also great differences in upper secondary schools' levels of participation. Distance to the nearest higher education institution and the size of the upper secondary school affected the participation models. There is a need to support cooperation between institutions to ensure equal possibilities for students, such as common structures, better information, as well as a multitude of different opportunities.



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1. Introduction

There are myriad factors affecting one's decision when choosing a field of study. The decision is influenced, for example, by interest in the field, the status of the field, science- and scholar-related activities and hobbies, parental support and role models, teacher encouragement, future career options, academic self-image, and experienced academic abilities [1,2]. Research indicates that family background, hobbies, self-regulation of learning activities, and self-efficacy have major influences on interest in science in particular [3–5]. Students' self-efficacy also affects their perceptions of the learning environment [5]. Learners should be engaged in science activities when they are young because research has shown that most learners develop their interest in and attitudes about school sciences before the age of 14 [6]. In this sense, transitioning is a process that starts long before entering a higher education institution. It also continues during the first year of study at university due to, for example, mismatched expectations, challenges in adapting, and lack of motivation, which can lead to higher dropout rates and longer study times [7,8]. Therefore, to ensure a successful transition to the next educational level and effective study therein, it is important that career decisions are based on realistic information.

According to earlier research, prior knowledge and academic counseling play major roles in ensuring a successful start to higher education [9,10]. However, there is little knowledge about the impact of upper secondary–university cooperation on decision making.

There has been some research on school–university partnerships, outreach, and different kinds of cooperative actions between universities and schools [11,12]. For example, Jansen and Suhre [11] found that there was a gap or disconnect between students' expectations and the reality of first year at higher education institutions (HEIs), both in content and teaching methods. One solution to support this mismatch of expectations is cooperation between HEIs and upper secondary schools. In addition, preparatory programs or outreach programs could smooth the transition by giving a more realistic picture of higher education [12]. Although some types of programs have been implemented, for example in the Netherlands, the programs have not been part of the upper secondary school curriculum and the number of students participating in such activities has been small [8].

As mentioned, there has been little research about principals' views on cooperation activities intended for upper secondary school students and their orientation to tertiary education. Especially, there is a lack of studies about higher education programs that do not have good channels to interact with secondary education schools. This is the knowledge gap that this research aims to address. We claim that it is important to provide adequate information to students before entering higher education. To support the described challenge, the aim of this study was to evaluate the opportunities provided by this kind of cooperation conducted during formal education as guided by the national core curriculum. We conducted our evaluation by analyzing good practice models of cooperation and mapping out the opportunities and challenges from the perspective of Finnish upper secondary school principals via a questionnaire. Because this study was conducted in Finland, we review the earlier research on upper secondary school–higher education cooperation and reflect on the educational transition situation and the current state of cooperation in Finland.

2. Cooperation and Collaboration between Higher Education and Upper Secondary School Levels

In this article, we use the term cooperation to describe upper secondary schools, upper secondary school students, and higher education institutions working together to help students make better informed decisions and smooth the transition. Some of the activities described are closely connected and tailored to collaboration with other institutions, whereas some are more generalized activities. In the research literature, school–university cooperation is usually related to in-service teacher education or continuous and lifelong learning. Collaboration includes supporting teachers at work, organizing research interventions, and applying experimental and research theory in practice. Especially, collaborations or partnerships are connected with teacher training, where pre-service teachers are provided with field experiences when they are studying [13,14]. Many collaborative programs have emphasized new instructional practices and transforming institutions with educational innovations [15].

There has been criticism that universities often act as facilitators of change in schools during collaboration rather than as part of a reciprocal partnership [16]. In a systematic review of school-based partnerships by Green et al. [17], the importance of genuine relationships and common vision were found to be essential for successful partnerships. Cooperation with school students is often initiated by higher education institutions as part of their outreach or student-recruiting programs, which include organizing student recruitment events [18]. Especially in the United States, universities have outreach programs especially to attract those students who typically are underrepresented in the academic sphere. Especially in early partnerships, emphasis was placed on recruiting minority and poor students [15], but also to deal with the increasing need to attract high-ability students especially in STEM subjects. There have been several outreach initiatives and programs to promote STEM education overall and they have also had an impact on tertiary education through collaboration with basic and secondary education [19]. Few studies have been conducted on the importance of career guidance and the effect of career development programs coordinated by universities [20]. Some cooperation between secondary schools and higher education institutions is present in the literature regarding a knowledge gap be-

tween educational levels. There have been some projects in which upper secondary school students have been taught in cooperation with a university. In addition to content knowledge, a partial purpose of the project was to inspire the upper secondary school students and give them a broad idea of what studying at a university looked like [21]. Cooperation is seen as beneficial for upper secondary school students, because teachers' knowledge of the requirements of higher education and the workforce can be improved with the help of versatile cooperation, and their own knowledge of subjects can also be developed [15]. There have been positive results in upper secondary school students' confidence in attending university even after a short exposure and collaboration with universities. Outreach programs have been beneficial in promoting interest in academic careers [22].

It was important for this study to be conducted in Finland because the transition to degree-oriented studies from the secondary education level in Finland is slower than the OECD average [23]. Only 34% of students who completed upper secondary school continued to tertiary education the same year as graduation [24]. Cooperation between upper secondary schools and universities has been aimed at smoothing the transition from secondary to tertiary education, among other things. Although there are differences in pathways for tertiary education programs, in Finland more than 90% of first-time tertiary students enter bachelor's programs. In other OECD countries, short-cycle tertiary education is more popular. Admission to many programs in Finland is quite restricted and they have high rejection rates [23]. To address these issues, different measures have been taken in the Finnish educational system. The updated act on general upper secondary schools in Finland states that schools should provide increasing and closer cooperation with higher education institutions and work enterprises. According to the new curriculum standards [25], teaching and other activities in upper secondary education should ensure that students have diverse opportunities to obtain information and experiences about studying at the higher education level. Tertiary or higher education in Finland comprises both universities and universities of applied sciences. The latter are institutions that provide professional higher education in applied research and development [26]. In this article, we address cooperation with both HEI streams as a whole.

The Finnish model of university–upper secondary school cooperation includes a broad spectrum of activities directed towards upper secondary school students. In the Finnish model, cooperation is part of the curriculum and courses in upper secondary schools. It includes visits to university career days and visits by researchers. Despite the good actions, there is a need for more research. According to a report by the Ministry of Education and Culture (2017), cooperation is limited in practice to study visits or visits by university representatives as part of student guidance and post-secondary education. In addition, according to the same report, there are no statistics about the number of upper secondary school students who participate in university courses.

Many Finnish universities interact with the surrounding society. In Finnish legislation, the missions of universities are to promote independent academic research and to provide research-based higher education. The third mission is that “universities shall promote lifelong learning, interact with the surrounding society, and promote the social impact of university research findings and artistic activities” (Universities Act 558/2009). These interactions with the surrounding society can be achieved in a range of ways. Some of the outreach activities are intended for children and youth. For example, universities take part in public outreach programs with the non-academic sphere, which includes, for example, conducting student recruitment events for upper secondary students [18]. Out-of-school experiences at the upper secondary school level have had a positive impact when students are transitioning to higher education regarding their attitudes and choice of study program. For example, Reed et al. [27] reported that informal positive experiences and extracurricular science activities were factors students highlighted when entering higher education in their chosen field of study.

3. Research Design and Methods

The purpose of this study was to understand the opportunities for upper secondary schools when seeking to cooperate with universities and universities of applied sciences. In this study, the opportunities were studied by analyzing principals' views on the challenges, solutions, best practices, and benefits of cooperation. To fulfil the set aim, the study was guided by the following main research question (RQ): What opportunities can upper secondary school—higher education cooperation offer? To provide answers to the main RQ, we designed multiple RQs that enabled us to analyze the possibilities from different perspectives:

- RQ1: Does the school's location and size affect students' participation in cooperation activities?
- RQ2: What are the benefits of cooperation and best practices to achieve them according to the principals?
- RQ3: What are the challenges according to the principals? How can those challenges be avoided?

RQ1 represents the quantitative research whereas RQ2 and RQ3 required the qualitative approach. To answer both quantitative and qualitative research questions, we implemented a mixed-methods approach [28].

3.1. Data Gathering

Principals' views were gathered using an online survey questionnaire that consisted of multiple choice and open-ended items. The multiple choice items provided answers for RQ1. The open-ended items were needed to provide a comprehensive view and reasoning for RQ2 and RQ3. The survey comprised six parts (see Appendix A): I: Background information, II: Goals in local curriculum, III: Good practices, IV: Challenges, V: Need for Support, and VI: Other. In the background information, the principals were asked about the size of the school, region, distances from the closest university and university of applied sciences, and if they had a formal agreement with an HEI.

The survey was conducted with the cooperation of the Finnish National Agency for Education. The questionnaire was prepared by experienced educational researchers and educational advisors from the Finnish National Agency for Education and the University of X. Previous domestic surveys were used as the basis of the survey. The request to participate in the survey was sent by the Finnish National Agency for Education in March 2021. Principals were sent two reminders and the survey was closed in April 2021. The total number of participants was 94. The sample size was reasonable for the selected method, but it was a convenient sample rather than a random sample of upper secondary schools. Full generalizability of the findings is not possible, but the study provides information about the current state of the situation.

The sample represents Finnish principals quite well. During the data gathering period, there were 335 upper secondary schools in Finland, which meant that 28% of upper secondary schools participated in the research. We used a common determinant in Finland for small upper secondary schools of 150 students, and 37 (39%) of the respondents were from small upper secondary schools. The proportion of small upper secondary schools in Finland is about 45% (see Table 1).

Distance from the university was one piece of the background information. The information was sought on a five-point scale from less than 10 km to more than 100 km. Distances to the nearest university and university of applied sciences were sought separately. We received responses from every region of mainland Finland. In proportion to the number of upper secondary schools in the region, the highest number of responses came from Uusimaa, where 43% of upper secondary schools responded to the survey. The distances to higher education institutions were also divided by region (see Table 2). In most of the participating upper secondary schools, the university was less than a hundred kilometers away. The geographical differences were large due to the locations of the higher

education institutions. Over half of the respondents (53%) had an HEI less than 50 km away (see Table 3).

Table 1. Background information of participants' schools.

Feature	Amount	Percentage
Respondents	94	-
Number of students (mean)	289	-
Number of students (median)	200	-
Small upper secondary schools (under 150 students)	37	39%
Large upper secondary schools (over 150 students)	57	61%

Table 2. Number of participants and proportion by region.

Region	N	% of N	Total Number of Schools	% of Total Number of Schools
TOTAL	94	100%	335	28%
Uusimaa	26	28%	61	43%
Southwest Finland	8	9%	25	32%
Satakunta	5	5%	16	31%
Kanta-Häme	2	2%	10	20%
Pirkanmaa	3	3%	29	10%
Päijät-Häme	2	2%	8	25%
Kymenlaakso	2	2%	10	20%
South Karelia	2	2%	7	29%
South-Savo	1	1%	13	8%
North Savo	5	5%	20	25%
North Karelia	3	3%	13	23%
Central Finland	7	7%	17	41%
South Ostrobothnia	5	5%	19	26%
Pohjanmaa	3	3%	16	19%
Central Ostrobothnia	3	3%	8	38%
North Ostrobothnia	7	7%	34	21%
Kainuu	2	2%	6	33%
Lapland	8	9%	22	36%

Table 3. Distance between upper secondary school and the closest HEI, by region.

Region	N	Under 10 km	10–25 km	26–50 km	51–100 km	Over 100 km
TOTAL	94	35	15	17	19	8
Uusimaa	26	17	5	3	1	0
Southwest Finland	8	2	3	3	0	0
Satakunta	5	0	1	3	1	0
Kanta-Häme	2	1	1	0	0	0
Pirkanmaa	3	0	1	1	0	1
Päijät-Häme	2	0	0	1	1	0
Kymenlaakso	2	2	0	0	0	0
South Karelia	2	1	0	1	0	0
South-Savo	1	1	0	0	0	0
North Savo	5	1	0	1	3	0
North Karelia	3	1	0	0	2	0

Table 3. *Cont.*

Region	N	Under 10 km	10–25 km	26–50 km	51–100 km	Over 100 km
Central Finland	7	2	1	0	4	0
South Ostrobothnia	5	1	0	2	2	0
Pohjanmaa	3	2	1	0	0	0
Central Ostrobothnia	3	0	0	1	2	0
North Ostrobothnia	7	1	2	1	2	1
Kainuu	2	0	0	0	0	2
Lapland	8	3	0	0	1	4

3.2. Data Analysis

Conducting the research required both quantitative and qualitative data analysis methods. Descriptive statistics were used to obtain an overview of the dataset and to support other analyses. Correlation coefficients were calculated to explore relationships with different background variables and the schools' participation in cooperation activities with universities (RQ1) [29]. Analyses were undertaken using IBM SPSS statistics and Microsoft Excel for Microsoft 365. The data from open-ended items were analyzed using qualitative content analysis (RQ 2 and RQ3) [30]. Several researchers took part in the qualitative analysis. First, the researchers extracted sentences and statements that could belong to individual units of analysis and classified the analyzing units. Then, the analyzed units and classifications were discussed by researchers to reach an agreement on category formations in separate iteration sessions. Substantial agreement on the categories were found and the corresponding author performed the final revision.

Principals were asked in several questions to name three examples or reasonings. Some of the answers contained several aspects regarding the question and the original expressions were divided into several analyzing units for each to fit one category.

4. Results

4.1. Students' Participation in Cooperative Activities (RQ1)

The principals were asked to estimate the proportion of students who participated in activities with HEIs in the academic years 2018–2019, 2019–2020, and 2020–2021 (see Table 4). The number of participating students varied considerably by upper secondary school. For example, in the academic year 2018–2019, 19% of principals estimated that less than one in ten students took part in activities conducted by higher education institutions, and 18% estimated that more than nine out of ten upper secondary school students participated in cooperation activities with HEIs during the school year. However, the subsets of the relative proportions of participating students were quite small. In the academic years in question, the subsets remained relatively the same. Among the respondents, two extremes could be seen in the shares of students participating in cooperation activities.

There was no correlation or linear relationship between the distance from the closest university and the proportion of students participating in cooperation activities (Spearman's rho sig. 0.05). The correlations were calculated for the number of students at a school as well as the distance from the closest higher education institution (see Table 5).

There were many different cooperation models available for upper secondary schools. Upper secondary schools also developed some of the models together with higher education institutions. Information about the implementation of different types of cooperation models was sought with the structured question item 6 (see Table 6). The most-used cooperation models involved presentation days by higher education institutions, visits by higher education students or alumni to upper secondary schools, and a university or university of applied sciences course that could be accepted as an upper secondary school course or part of it. Most of the upper secondary schools that took part in the survey had participated

in a general open study-exhibition or a similar event at a university. The second most common model involved visits by staff of the higher education institution or alumni to the upper secondary school. Cooperation was also achieved through upper secondary studies. For example, open university courses that could be taken as part of the upper secondary school curriculum or visits to individual lectures were often implemented in the models (see Table 7).

Table 4. Proportion of students participating in cooperation activities in school years 2019–2021.

Proportion of Students	2018–2019	2019–2020	2020–2021
0–10%	19%	18%	18%
11–20%	9%	10%	13%
21–30%	10%	12%	10%
31–40%	16%	12%	13%
41–50%	3%	5%	6%
51–60%	5%	5%	6%
61–70%	5%	10%	6%
71–80%	4%	4%	4%
81–90%	11%	11%	10%
91–100%	18%	14%	14%

Table 5. Correlations between proportion of participating students and school size or distance from the nearest HEI.

Spearman's Rho	Proportion 2018	Proportion 2019	Proportion 2020
Distance			
Correlation coefficient	0.092	0.010	−0.051
Sig. (2-tailed)	0.376	0.926	0.625
N	94	94	94
Size			
Correlation coefficient	−0.080	−0.025	0.084
Sig. (2-tailed)	0.443	0.811	0.422
N	94	94	94

Table 6. Proportion of participating schools in different cooperation models.

Variable Number	Cooperation Models Implemented in the Last Three Years	N	% of N
VAR006	University organized open events or exhibitions/career days for students	85	90%
VAR007	Upper secondary school student visited a single lecture at a university	66	70%
VAR008	University students or alumni visited an upper secondary school	84	89%
VAR009	University lecturer or other staff visited an upper secondary school	64	68%
VAR010	Open university courses as a part of upper secondary school studies	70	74%
VAR011	Open university courses with credits for university	59	63%
VAR012	Upper secondary school course or part of it offered in cooperation with a university	43	46%
VAR013	University provided course especially for upper secondary students	45	48%
VAR014	Shared projects or courses with university students	42	45%
	Other	28	30%

Table 7. Proportion of schools participating in different cooperation models related to distance from the nearest HEI and school size.

Under 10 km %	10–25 km %	25–50 km %	50–100 km %	Over 100 km %	Cooperation Model	Under 150 Students	Over 150 Students
89%	93%	88%	89%	100%	University organized open events or exhibitions/career days for students	89%	91%
83%	80%	59%	42%	88%	Upper secondary school student visited a single lecture at a university	59%	77%
89%	93%	88%	84%	100%	University students or alumni visited an upper secondary school	86%	91%
94%	47%	53%	53%	63%	University lecturer or other staff visited an upper secondary school	54% *	77% *
80%	93%	65%	68%	50%	Open university courses as a part of upper secondary school studies	65% *	81% *
74%	67%	53%	53%	50%	Open university courses with credits for university	49% *	72% *
71%	33%	29%	32%	25%	Upper secondary school course or part of it offered in cooperation with a university	27% *	58% *
51%	73%	35%	32%	50%	University provided course especially for upper secondary students	32% *	58% *
66%	40%	29%	32%	25%	Shared projects or courses with university students	30% *	54% *
34%	33%	12%	42%	13%	Other	27%	32%

* indicates the most significant differences.

According to our data, it seemed that the size of the upper secondary school had positive correlations with some of the implemented models and a negatively correlation with distance from the nearest higher education institution (see Table 8). Correlations were calculated using Spearman's rho and half of the models had positive correlations with the size of the school at the 0.01 level (see Table 8). Models that had positive correlations included: university organized open events or exhibitions/career days for students (VAR006), university lecturer or staff visited an upper secondary school (VAR009), upper secondary school course or part of it offered in cooperation with university (VAR012), university provided course especially for upper secondary school students (VAR013), and shared projects or courses with university students (VAR014). It also seemed that more tailored cooperation models were less common in upper secondary schools with greater distances to a higher education institution. A greater distance from the upper secondary school to the nearest higher education institution had a negative correlation with a university lecturer or other staff visiting the upper secondary school, the university providing a course specially for upper secondary school students, and sharing projects or courses with university students.

Table 8. Correlation coefficients between school participation and school size or distance from the nearest HEI.

Spearman's Rho	VAR006	VAR007	VAR008	VAR009	VAR010	VAR011	VAR012	VAR013	VAR0014
Size									
Correlation coefficient	0.074	0.316 **	0.103	0.336 **	0.292 **	0.273 **	0.402 **	0.247 *	0.391 **
Sig. (2-tailed)	0.479	0.002	0.323	0.001	0.004	0.008	0.000	0.016	0.000
N	94	94	94	94	94	94	94	94	94
Distance to nearest HEI									
Correlation coefficient	0.056	−0.229 *	0.0015	−0.342 **	−0.193	−0.203 *	−0.359 **	−0.132	−0.315 **
Sig. (2-tailed)	0.592	0.026	0.890	0.001	0.062	0.050	0.000	0.204	0.002
N	94	94	94	94	94	94	94	94	94

**. Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

4.2. Benefits of Cooperation and Best Practices (RQ2)

In the open-ended items, principals were asked to explain why they should cooperate with higher education institutions. The principals answered the three most important benefits of cooperation. The principals' answers were broken down to correspond to individual categories. In total, we obtained 226 analyzing units from the answers of 94 principals (see Table 9). The benefits of cooperation were diverse for different stakeholders. The most beneficial impacts of cooperation were seen as being for upper secondary school students,

but the principals also listed benefits for teaching in upper secondary schools, for teachers, and there were mentions of fulfilling obligations and the requirements of the legislation.

Table 9. The benefits of cooperation according to principals (N = 94).

Benefit	Frequency	Percentage
Smoothing the transition, encouragement, self-efficacy, finding own path, making informed decisions	87	38%
Diversifying and deepening upper secondary school studying	29	13%
Getting to know higher education—students gain insights into higher education	23	10%
Motivation for upper secondary studying	18	8%
Direct benefit—getting credit or a place to study	16	7%
Teachers' continuous learning/in-service training quality of upper secondary education	13	6%
Knowledge increases on both sides, both in higher education institutions and upper secondary schools	11	5%
General knowledge—scientific world view	8	4%
Obligation—curriculum and legislation	8	4%
Other	13	6%
Total	226	101%

The principals thought that the biggest benefit for students participating in higher education institution activities was in helping them to make more informed decisions about their futures. They rationalized their answers, for example, that the students feel more motivated when they have a better understanding of what studying at a higher education institution is like. It was also beneficial for understanding the opportunities of fields that are not taught in upper secondary schools. An important factor was that meeting higher education students to whom the upper secondary students could relate promotes self-efficacy. Some of the cooperation models benefited students directly by giving them university credits. Obtaining general knowledge and understanding the scientific process were also seen as benefits. The principals reasoned that there were benefits for upper secondary schools by diversifying and in some cases deepening the upper secondary school courses. The principals thought that cooperation acts as a possibility for continuous learning, especially for subject teachers, by updating teachers' information about the newest university research. An important factor was increasing knowledge on both sides, with higher education institutions learning as well.

The principals were also asked to name the three best practices and to provide their reasoning regarding which factors promote cooperation and what could be improved with cooperation. The answers were analyzed using qualitative content analysis. In total, we obtained 216 analyzing units from the principals' answers. There were four main categories from the open-ended answers: courses (N = 59), visits (N = 88), events (N = 32), and different tailored cooperation (N = 37). Courses included cooperation with upper secondary schools, different tailored courses for upper secondary schools, and upper secondary school students taking part in university courses. The open-ended items were also used for triangulation purposes. The principals justified their answers about the best practices and their justifications noted many benefits of university–upper secondary school cooperation.

Examples from the answers:

- “Based on the feedback, the goals have been met. Students have gained additional skills to apply for the field of their choice or have perhaps noticed that the field of their dreams is not the right one.” (Respondent id 42)
- “We can do something that cannot be done at our own school.” (Respondent id 39)
- “Due to the distances, the Study Units implemented as online courses also enable the participation of students from sparsely populated areas.” (Respondent id 17)

- “From one student to another, the message is understood well. We often have former students presenting.” (Respondent id 39)
- “Laboratory work in science subjects at the university, the environment, the versatility of the equipment, and the “authenticity” motivate the students.” (Respondent id 31)
- “Visits to higher education teaching situations provide a realistic picture of studying.” (Respondent id 89)

According to the data, the key factors that foster cooperation are active people on both sides that are keen to promote cooperation, projects that provide funding and new kinds of participation models, as well as communication from higher education institutions about the possibilities they provide.

The principals were asked about the role of the school community in the planning and implementation of upper secondary school–university cooperation (see Table 10). They were asked to select actors and briefly describe their roles and tasks. Principals, study counselors, subject teachers, and students participated in cooperation activities most often in upper secondary schools. Most of the principals saw their own role as being important. The role of study counselors and subject teachers was considered essential.

Table 10. Different actors in cooperation.

Actor	N	%
Principal	81	86%
Study counselor	92	98%
Subject teacher	86	91%
Students	31	33%
Other	15	16%

Some of the principals justified their answers. In the justifications, study counselors were considered to be the most important in terms of career and educational choice guidance. It was considered important to organize general familiarization visits to universities. The role of subject teachers was seen as important in organizing the practical implementation of cooperation with visits related to their own subject by faculty and researchers in their own field.

Only a third of the principals named students as actors related to cooperation. The answers were explained by the principals reasoning that the students’ role was mainly seen as participation in the planning and organization of cooperation activities. The students also played an important role in giving their opinions as feedback, thereby in developing cooperation. The section was interpreted explicitly in terms of the planning phase and organization of cooperation in this context and not as participation in the activity itself. Asking about different actors and roles in cooperation was also useful for triangulation purposes about the best practices in cooperation.

4.3. Challenges in Cooperation (RQ3)

The principals were asked about the challenges in cooperation. In addition, the survey had many other sections on the topic, including the contributing factors in upper secondary school–HEI cooperation, how to promote cooperation, solutions to the challenges, and the kinds of aid and training needed.

The challenges could be seen from a range of stakeholder viewpoints (see Table 11). The principals answered that there were challenges for upper secondary school students, teachers, universities, schools, and municipalities. There were several different types of challenges in the principals’ answers. They described the different challenges of the new versatile operating model. Challenges arose from the different backgrounds and perspectives of different parties. The most common challenge named was time sufficiency, followed by distance from the university, and lack of resources. Challenges in cooperation were described from the points of view of all students, teachers, universities, and educational organizers.

Table 11. Summary of challenge categories.

Category	Number of Mentions
Distance	31
COVID	6
Teachers and student counselors	14
Resources	37
HEI-originated, possibilities, information, interest	36
Students, stress, interest	25
Structure and curriculum	39
Other	19

From the students' point of view, the principals mentioned the workload and full schedules from upper secondary courses. The students were partially seen to be stressed about matriculation examinations. The structure of upper secondary schools was seen as part of the problem. Challenges also arose from the varied interests of the students, and finding suitable cooperation activities for everyone. Some of the students were motivated in certain fields of study, but a more general orientation would be more suitable for some of the students.

From the teachers' and student counsellors' points of view, the principals highlighted lack of time and the changes brought about by the new operating model as complicating factors. Some answers also mentioned that not all teachers were interested in fostering cooperation. There were also mentions of jointly shared and external challenges. The courses are full of content and some of the answers highlighted that there was no time for cooperation in courses.

From the higher education point of view, the principals answered that the models provided by HEIs should be more versatile, and communication and advertising about possibilities are sometimes weak. The principals also noted that there was some miscommunication about who to contact when they would like to cooperate. Distance from the nearest HEI was also seen as a challenge, which was also related to time and resource challenges because the longer the distance from the upper secondary school to the HEI, the more expensive and time-consuming the travel. The questionnaire was distributed at the time of the COVID-19 epidemic, and this was also seen as a challenge. The ongoing changes in the education field were also mentioned.

Structure was also considered a time-related issue, but the principals emphasized that the structure of upper secondary school education does not easily fit cooperation.

The principals were also asked about solutions to the challenges (see Table 12). No solutions were provided for the challenges related to upper secondary school students' studying. Most of the solution categories were related to resources at various levels. The principals pointed out that teachers should be allocated working time for cooperation activities. Municipalities and educational organizers should allocate more resources to cooperation. In addition, regulations were brought forward as a solution option for the obligations of higher education institutions. Other solutions included structures for cooperation and responsible people identified at universities so that upper secondary schools would know who to contact. In general, many solutions were about increasing different kinds of opportunities for cooperation and better communication about the options.

The need for support was determined through two open-ended sections. The principals were asked about the need for training and other support. Several of them raised the need to secure resources. Funding for cooperation and the need for travel support were considered to be important. Training should be offered in a multidisciplinary manner to include study counselors, principals, and subject teachers. In other support, it was hoped that the offer of cooperation from higher education institutions would be more clearly presented to upper secondary schools.

Table 12. Summary of solution categories.

Category	Number of Mentions
Worktime	7
COVID-19	3
Distance learning	25
Upper secondary school structure and course requirements	19
Obligation for HEI	8
Funding	16
More possibilities and communication	23
Structures for cooperation	20
Other	21

5. Discussion

The survey provides important information about principals' views on cooperation between upper secondary schools and higher education institutions. Helping students to make more informed decisions about their initial choice of discipline in higher education is one of the key factors in smoothing the transition to the next educational level. As stated previously, to ensure a successful start in higher education, proper study counseling and prior knowledge are among the key factors [9,10].

Based on our results, the upper secondary schools were participating in cooperation activities to varying degrees. Some of the upper secondary schools had been cooperating for a long time and had established ways of doing things every year. At these schools, most students participated in cooperation activities. At the other end of the spectrum, there were upper secondary schools that did not fully cooperate and there were still many students who do not participate in coordination activities.

The current research highlights the need for alternative forms of cooperation. Students are different from each other and have different career aspirations. Some students are unsure about their futures and are in need of general orientation about higher education. On the other hand, some students are motivated and even capable of starting university-level courses in a discipline in which they are interested. Activities that were the most popular according to the survey were general orientation days at universities or university students visiting upper secondary schools. Upper secondary school students have considered general university lectures to be inspiring [21]. They give a peek at what it is like to study at a university and can provide information about study disciplines.

Student groups who are not well-represented in universities and have less contact with the academic world need more tailored outreach programs [20]. Altogether, many forms of cooperation are useful when considering students' interests. Meeting students is important for general orientation and seeing relatable persons succeed can strengthen self-efficacy, which is also important regarding the transition [5]. The purpose of having a variety of programs is to provide a more realistic picture of higher education to help the transition [12].

As seen in the survey results, it seems that the larger size of the upper secondary school had positive correlations with some of the implemented models and a negative correlation with a greater distance from the nearest higher education institution. The larger size of the school may mean larger resources considering staff and finances. In addition, there are more optional courses that may enable more visits and cooperation opportunities. Moreover, it is easier to visit a closer higher education institution. Considering the factors that foster cooperation, the challenges that the principals mentioned in their answers, and the proportion of students participating in cooperation activities, it seems that there was a big difference between different schools. Some schools were active in cooperation, if they had active teachers, student counselors, and principals who had good connections with higher education institutions. On the other hand, there was a need for supporting structures in some of the other upper secondary schools to get them to participate in cooperation in a wider sense. Some schools had established models of cooperation, but

for other schools and staff, initiating cooperation was sometimes difficult as it was hard to know who to contact at the higher education institution, where to get more information, and how to include cooperation as part of courses. Encouraging cooperation is much easier than implementation and there are challenges related to school structures; different levels of education have different schedules and students have full schedules and are focused on matriculation examinations. The benefits of collaboration highlighted by this survey are, on the other hand, significant. Principals saw benefits not only for upper secondary school students but also for teachers, and cooperation was also of benefit to other aspects of upper secondary school courses. The survey brought out the importance of upper secondary school–university cooperation and the need for co-development. Strengthening cooperation requires sharing good participation models and resources for activities between all parties. Partnership programs require funding even after their initiation, because even successful programs end if there are no additional resources to keep implementing them [17]. Some of the solutions to the problems suggested by the principals did not require many resources, such as building connections and better communication about opportunities for cooperation. The survey was conducted during the COVID-19 pandemic, and distance-learning options have developed greatly. Distance participation options in higher education cooperation were also seen a solution for schools located further away from HEIs.

6. Conclusions

The structures of higher education institutions differ from those of upper secondary schools, including the learning environment and the level of independence of study. In addition, there are also other changes in students' lives, such as moving to a different region, for example. Students require support during the transition both in upper secondary schools and at university. They need information and a realistic view of higher education. The information obtained in this study can be used to support the joint planning, implementation, and training of practical upper secondary school–university cooperation and in the development of curricula in municipalities, upper secondary schools, and universities. To improve equal access, it is important to produce more online opportunities alongside existing ones and to study their effectiveness. In the future, all parties will also need more training on the subject, as well as additional research on the organization and effectiveness of cooperation. The current research had some limitations, including that the questionnaire responses were gathered using a broad national network as a convenient sample. Although the population is not a random sample, it represents the proportions of Finnish upper secondary schools in terms of larger and smaller schools. It can also be stated that we received answers not only from very active upper secondary schools but also from schools that do not participate in cooperation at the full scale. Future investigations are needed about the effectiveness of cooperation and experiences from teachers' and students' points of views.

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Appendix A Survey Questionnaire

I Background Information

1. Size of upper secondary school (number of students):
2. Region (province):
3. Distance from the nearest
 - (a) university (approx. km):
 - less than 10
 - 10–25
 - 26–50
 - 51–100
 - more than 100
 - (b) university of applied sciences (approx. km):
 - less than 10
 - 10–25
 - 26–50
 - 51–100
 - more than 100
4. Upper secondary school-university cooperation:
 - (a) Does your educational organizer have a cooperation agreement with higher education institutions
 - yes
 - no
 - pending, when? (mm/yy)
 - universities of applied sciences
 - universities
 - Does your upper secondary school have a cooperation agreement with higher education institutions
 - yes
 - no
 - pending, when? (mm/yy)
 - universities of applied sciences
 - universities
 - (b) Other cooperation without an official agreement
 - yes
 - no
 - pending, when? (mm/yy)
 - universities of applied sciences
 - universities
 - cooperation of study counselors with universities
 - yes
 - no

- pending, when? (mm/yy)
 - universities of applied sciences
 - universities
5. The key actors of university cooperation in upper secondary school. (Choose the actors and briefly describe their roles and tasks.)
 - principal yes, no role and tasks
 - study counselor(s) yes, no role and tasks
 - subject teacher(s) yes, no role and tasks
 - students yes, no role and tasks
 - Who else? yes, no role and tasks
 6. Models implemented in upper secondary school–university cooperation in the last three years (including virtual implementations):
 - University organized open events or exhibitions/career days for students
 - Upper secondary school student visited a single lecture at a university
 - University students or alumni visited an upper secondary school
 - University lecturer or other staff visited an upper secondary school
 - Open university courses as a part of upper secondary school studies
 - Open university courses with credits for university
 - Upper secondary school course or part of it offered in cooperation with a university
 - University provided course especially for upper secondary students
 - Shared projects or courses with university students
 - Other
 7. Estimate the number of students who participated in upper secondary school–university cooperation activities in different academic years as a percentage of the total number of students in the upper secondary school:
 - 2018–2019: 0–10% 11–20% 21–30% 31–40% 41–50% 51–60% 61–70% 71–80% 81–90% 91–100%
 - 2019–2020: 0–10% 11–20% 21–30% 31–40% 41–50% 51–60% 61–70% 71–80% 81–90% 91–100%
 - 2020–2021: 0–10% 11–20% 21–30% 31–40% 41–50% 51–60% 61–70% 71–80% 81–90% 91–100%

II Objectives and Implementation in the School Curriculum

1. Why is upper secondary school–university cooperation worth doing? (Briefly describe no more than 3 reasons with justifications.)
2. How is upper secondary school–university cooperation reflected in your school's new curriculum?
 - (a) in the common part (chapters 1–6.2):
 - (b) for subjects:

III Best Practices

1. What have been the best practices related to upper secondary school–university cooperation that have been implemented so far? (Briefly describe up to three best practices and give justifications.)
2. What are the key factors that have promoted upper secondary school–university cooperation? (Describe up to three factors.)
3. In what way could upper secondary school–university cooperation be promoted in the near future? (Briefly describe up to three ways.)

IV Challenges

1. What are the main challenges related to upper secondary school–university cooperation? (Describe up to three factors and give a brief justification.)
2. What would be the solutions to the challenges you highlighted above?

V The Need for Support

1. What training (and for whom) might be needed in the future to develop upper secondary school–university cooperation?

justification:

2. What kind of other support might be needed in the future?

justification:

VI Other

What else would you like to say on the topic?

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