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Article

Entrepreneurship as a Neglected Pitfall in Future Finnish Teachers' Readiness to Teach 21st Century Competencies and Financial Literacy: Expectancies, Values, and Capability

Mette Ranta ^{1,*} , Milla Kruskopf ¹, Marilla Kortessalmi ^{1,2}, Panu Kalmi ³ and Kirsti Lonka ¹

¹ Faculty of Educational Sciences, University of Helsinki, 00100 Helsinki, Finland; milla.kruskopf@helsinki.fi (M.K.); marilla.kortessalmi@laurea.fi (M.K.); kirsti.lonka@helsinki.fi (K.L.)

² Business Administration, Laurea University of Applied Sciences, 01300 Vantaa, Finland

³ School of Accounting and Finance, Economics, University of Vaasa, 65200 Vaasa, Finland; panu.kalmi@uwasa.fi

* Correspondence: mette.ranta@helsinki.fi

Abstract: The aim of this study was to examine entrepreneurship in the context of future Finnish teachers' readiness to teach 21st century (broad-based) competencies. Teachers' self-efficacy in teaching entrepreneurial skills and financial matters is vital for their pupils to actively participate and flourish in future society. The study utilized survey data of future teachers' expectancy-values in teaching seven broad-based competencies of the current national curriculum and their financial literacy. Future teachers expressed high interest in all competencies but reported the least self-efficacy and highest cost in teaching ICT as well as working life and entrepreneurship competencies. Teaching self-efficacy (TSE) in entrepreneurial competencies was predicted by subjective evaluations of financial capability and TSE in consumer skills. Teaching STEM subjects as well as male gender were related to better objective financial knowledge. We discuss the implications of observed financial capability, lack in self-efficacy, and high experienced cost of teaching these competencies. Support for future teachers' readiness to teach working life skills, entrepreneurship, and financial literacy through phenomenon-based school subject collaboration, formal teacher training, and digital applications are emphasized.

Keywords: teacher training; entrepreneurial skills; financial education; self-efficacy; 21st century competencies; Finland



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1. Introduction

Globalization and current societal change towards automatized and digitalized services require new skills and competencies. Young people are expected to develop new informal learning and entrepreneurial skills to maintain continuous learning and to succeed in increasingly fragmented career paths and with irregular sources of income [1]. To flourish in the digital economy, young people need to combine both digital and entrepreneurial skills, and our teachers need to be prepared to teach these skills to their pupils. Digital skills, working life skills, and entrepreneurial skills are intertwined, as currently highlighted by the DigiConsumers research project [2]. Different classifications for these key competencies required by 21st century learners and citizens have been formed, for example the 4C abilities—creativity, critical thinking, communication, and collaboration [3]. In the context of this study, in Finland, these skills have been incorporated into the national educational curricula as seven broad-based, or 'transversal', 21st century competencies [4–6]. They also align with the competencies defined in the OECD Learning Compass 2030 [7] and its conceptual learning framework, The Future of Education and Skills: Education 2030, which underlines the importance of understanding, participating in, and shaping the fast-changing world. Young people need not only the acquisition of specific knowledge and

skills, but also the readiness to build key transformative competencies crucial for subjective and collective well-being as well as further learning across the entire curriculum and later in life [8] to become active participants of the society [9].

Furthermore, the digitalization of financial services, changes in consumption styles, and new forms of money management (e.g., paying, saving, etc.) require that these new competencies are also stressed in relation to entrepreneurial and financial education at schools. Teaching of financial literacy has been criticized for not sufficiently considering the financial environment individuals are in [10]. Entrepreneurial skills as well as financial knowledge and behaviors for financial life management need to be not only acquired, but also adapted to these current demands. Due to innovative financial products as well as dynamic and fragmented financial services, becoming a successful citizen in today's complex and ever-changing financial landscape requires strong beneficial financial responsibility, risk management, and grasping new financial concepts [11–13]. Economic difficulties and easy access to quick loans and credit payment loans have resulted in worsening debt problems and risk of economic hardship [11,14]. If resources are very scarce, financial literacy is not enough to help individuals out of poverty. According to Willis [9], education should provide understanding of how economic systems function as well as how they are construed in society. In that sense, education should serve not only knowledge and skills, but also understanding of the functioning of economic systems as well as the required capabilities for active citizenship. More importantly, education as well as legislation should aim to keep up to date with the dynamic and rapidly changing financial environment.

Young consumers today also often encounter data-driven business models where, in return for a free and engaging digital service ecosystem (i.e., games or social media), they offer their personal data as the product sold to advertisers for algorithmically hyper-targeted and persuasive marketing, which, in turn, may further worsen their financial difficulties [15]. Data-driven business models also disrupt traditional price- and wage-setting mechanisms [9]. Furthermore, youth today must constantly manage changing societal circumstances and tolerate insecurity, being at risk of becoming financially vulnerable, that is, at risk for consumer detriment [16]. Youth financial vulnerability and risk of falling into financial hardship is present not only due to subjective insecurity in financial management, but also due to actual lack of experience in the financial domain.

As far as the youth population is to develop broad-based competencies, the same competencies are required from their teachers as well, being increasingly responsible for teaching these skills to ensure equal opportunities in their pupils' development. There is a lack of research, however, on teachers' understanding and experiences in teaching these future competencies [17,18]. In the financial domain, current research suggests, for example, that teachers show great uncertainty in financial knowledge and identify themselves as having a low level of financial literacy overall [19,20]. In terms of consumer education, teachers perceive this as a challenge with contradictory values and the complex markets children encounter already from an early age [21]. Moreover, despite teachers' perceived interest or their given importance in a subject matter, they may lack the perceived competence [22,23] or self-efficacy [24] in teaching these skills, in addition to lacking actual content knowledge. Teachers, especially at novice stage, may also merely follow the subject matter-based syllabus and their overall pedagogical skills in teaching more complex issues may be limited, especially when they lack a more general knowledge base [17]. Experienced teachers, on the other hand, may simply refer to their everyday knowledge in these situations without being informed by experts. Competency, as a holistic concept, includes knowledge, skills, attitudes, and values; therefore, it is more than merely skills that are a prerequisite for competence formation [7]. A holistic perspective to competencies is emphasized in the entrepreneurial education domain. According to Arruti and Panos-Castro [25], competencies required from entrepreneurial teachers are identified in the categories of intrapersonal (e.g., self-efficacy), entrepreneurial (e.g., autonomy and entrepreneurial spirit), organizational (e.g., adaptation to the environment), communication (e.g., digital competencies), and social (e.g., teamwork). As these competencies require

continuous upskilling (e.g., changes in digital infrastructure), the European entrepreneurial education framework, EntreCompedu, highlights the approach of teachers and educators as learners [26].

The aim of the present study is to examine future Finnish teachers' readiness to teach 21st century competencies within the expectancy-value theoretical framework [22] and their teaching self-efficacy in working life and entrepreneurial competencies, as well as financial literacy. With the term *teaching self-efficacy (TSE)*, we refer to teachers' self-evaluated instructional ability regarding the broad-based competencies, as an aspect of their expectancy beliefs [22]. While previous research supporting the expectancy-value framework has primarily focused on pupils' expectancies and values, there are also studies showing the significance of teachers' conveying expectancies on their pupils [27]. However, teachers' self-beliefs, in other words, their own expectations for personal success are important, especially in relation to the entrepreneurial and financial education domain. While studies on teacher self-efficacy and content knowledge in general, and of specific school subjects and more recently on use of technology [28,29] and reading [30] exist, to our knowledge, there is a lack of research empirically testing of teacher self-efficacy in association with entrepreneurship skills and financial literacy. Finland has been in the forefront in both startup culture and digitalization, which justifies the contextual importance of this study. Moreover, as it is a requirement by the Finnish educational curricula that transversal skills are emphasized in all teaching, our study does not address merely those teachers who have these entrepreneurial and financial literacy objectives in their subject matter content (for example, in social studies), but our interest is about all future Finnish teachers.

Using the situated expectancy-value theory as our framework, we empirically test differences between future teachers' (i.e., pre-service or novice teachers; teacher students) teaching self-efficacy as well as the interest and experienced cost they portray in teaching the 21st century competencies [22,31,32] (Figure 1). Secondly, we examine future teachers' financial capability: objective financial knowledge, subjective financial knowledge, financial behavior, financial attitude, and financial confidence. We take teacher background factors into consideration (taught subject, age, and gender). Our research questions are as follows.

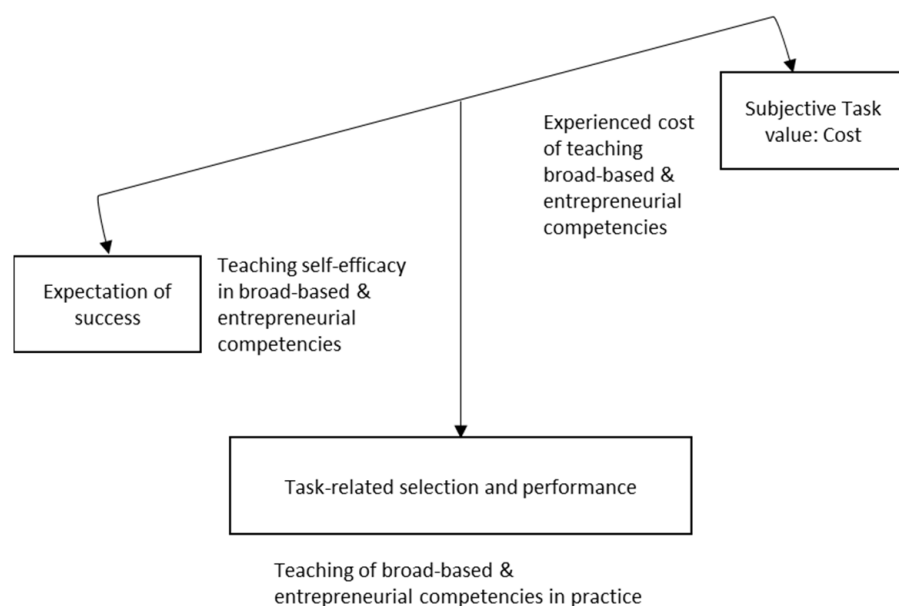


Figure 1. Based on situated expectancy-value theory [33], we propose that the imbalance of task-related expectancies and costs reveals the greatest pitfalls (RQ1) in future teachers' readiness to teach aspects of broad-based and entrepreneurial competencies.

RQ1. What are the greatest pitfalls in the future teachers' readiness to teach the 21st century competencies based on their expectancy-value beliefs (i.e., interest, teaching self-efficacy, and cost)? Are there some aspects within the working life and entrepreneurship competencies as well as financial literacy that the future teachers find particularly difficult or burdensome to teach, as according to Figure 1?

RQ2. How are teaching self-efficacies (TSE) in the different aspects of entrepreneurial competence and teacher background factors, such as taught subject, age, and gender, related to the future teachers' objective and subjective financial capability? Most importantly, what factors predict future teachers' TSE in entrepreneurship: financial capability, TSE in consumer skills, or the background factors of taught subject, age, and gender?

1.1. The Need for 21st Century Competencies

While comprehensive subject matter knowledge is indeed important, in the current, rapidly changing society, thinking skills, personal growth, citizenship skills, and learning how to learn are crucial and require a combination of both phenomenon- and content knowledge-based learning [5]. Young people are expected, for instance, to learn how to regulate their own learning and to adopt an entrepreneurial attitude towards life in general. This does not mean that all individuals should become entrepreneurs, but a specific type of entrepreneurial alertness and understanding are required to manage everyday life [32]. This means that young people need to actively take responsibility of developing one's skills and in seeking new opportunities with an adaptive and broad-minded approach [5]. Furthermore, it is undeniable that in the future, young people must manage complex problems with comprehensive learning to solve the so-called wicked problems of our time [34,35]. Effective solutions to these problems, such as the transition to sustainable growth, require that individuals put their knowledge, skills, and competencies into practice in an interdisciplinary manner. Moreover, skills referring to feelings, interest, adjustment, and the possibility to change are emphasized more than ever [36].

As young people make their transition from education to working life in the information society today, they should have not only the necessary skills of knowledge use, but also social skills, experimentation, innovativeness, and life-long learning skills [37]. The 21st century competencies that are required from youth today promote personal and professional success in education and work settings and participation in a sustainable, democratic society. As such, they are skills that are needed in everyday life, not only working life. They involve a new kind of informal learning and competencies such as complex problem solving, managing everyday life, collaboration and communication, cultural and ethical awareness, and entrepreneurship [16]. These skills have been incorporated into the Finnish National Core Curriculum for Basic Education as seven broad-based or transversal 21st century competencies that all schoolteachers irrespective of educational level or subject should promote (Figure 2; [4,38]). Lonka and colleagues [5,32] have further divided these seven main competence areas to different sub-competencies in their evaluation framework. Likewise, in the new National Core Curriculum for General Upper Secondary Education applied in autumn 2021, education builds upon the common objectives of six transversal competence areas, which include skills in life management and responsible participation [39]. Transversal competencies also support adaptation to complexity and uncertainty by taking responsibility of collective, societal well-being in the future [40].

For these competencies to be adapted to the school context at all educational levels, teachers also need to develop new, non-cognitive informal learning and social and emotional learning [41]. Furthermore, to support their pupils' learning, teachers need not only the relevant competencies, but also an entrepreneurial and innovative spirit themselves [21,42]. In the present study, our aim is to examine future Finnish teachers' readiness to put the present national curriculum into practice. In addition to the fact that these skills and competencies do not fit into the traditional subject-related curricula, there is a gap between learning these skills at school and the skills needed in life outside the school. Pupils need to navigate their way in unfamiliar contexts that require transformative competencies,

knowledge, skills, attitudes, and agency as conceptualized by the OECD Learning Compass 2030. However, many of these skills are learned outside the school context: at home, in peer groups, and in social media, for example [40]. This leads to unequal opportunities in pupils' skill development, based on socioeconomic background, for example. By the ideals of connected learning, these different contexts of learning are woven together with the aid of the ubiquitous digital technologies surrounding us [43]. As a matter of fact, we need to bridge the gap between what is going on in schools and what is happening outside schools, in the "real world" [44,45].

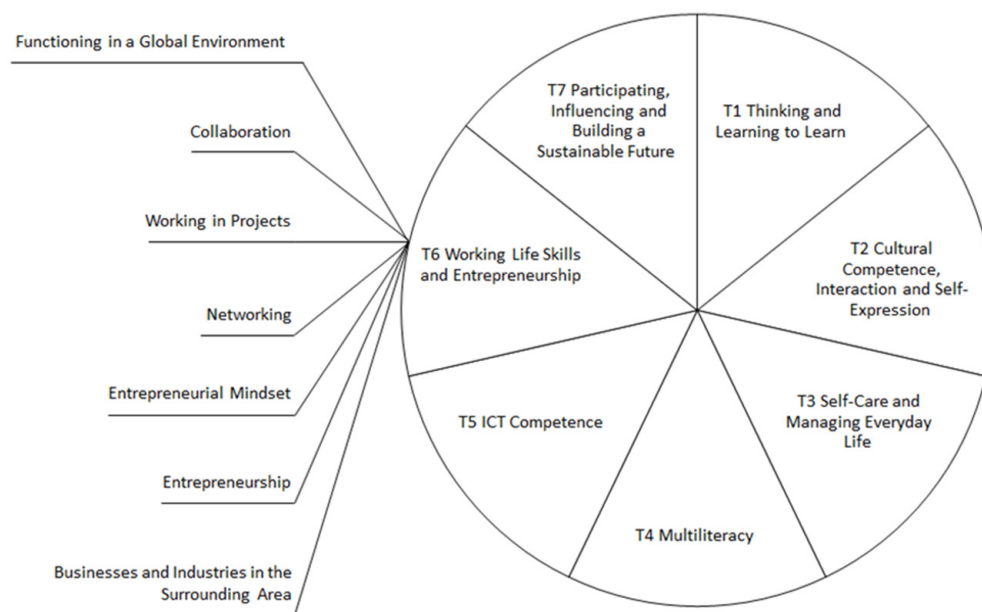


Figure 2. Transversal competencies from the Finnish National Core Curriculum for Basic Education [4] and the example sub-competencies of T6 from the evaluation framework of the author Lonka and colleagues [32].

In the entrepreneurship education domain, the challenge of teachers in their everyday work and teaching is to support the development of competencies that help the youth to flourish financially and take care of their future financial well-being. This also calls for specific subject matter knowledge as well as a broad understanding of entrepreneurship and working life, finances, and the economy. In the following section, we will briefly describe the current state of entrepreneurship education, and specifically in the Finnish curricula.

1.2. Entrepreneurship Education in the Finnish National Curricula

The Finnish National Core Curriculum for Basic Education emphasizes pupils' growth into participating and being responsible agents of society as well as of their own everyday life. This is the purpose of entrepreneurship education. Elements of financial and consumer education, specified in subject objectives as well as transversal objectives together support the growth for skillful, deliberate, and considerate individuals. In the curriculum, there are certain broad-based, 21st century competencies, that support, complement, or call for these competencies, such as entrepreneurial alertness, working life skills, and financial literacy including practical management of finances, knowledge of financial phenomena (interest, risk), and consumer skills [46]. The objectives of entrepreneurship and financial education are also directly written into the contents of different school subjects [4]. Similarly, teacher students participate in different levels of emphasis of entrepreneurship and financial education between school subjects. Social science teachers have usually studied one to two courses of economics, while home economics teachers' studies focus on consumer skills. Therefore, in home economics, the emphasis is on consumer behavior, values, skills,

rights, and individual budgeting—in other words, consumer education [41]. What is noteworthy, however, that in the Finnish education system, entrepreneurship education aims to achieve entrepreneurial behavior regardless of context and field from the beginning of basic education onwards [47].

Regarding the general upper secondary school curriculum, the objectives in social sciences consist of the understanding of economic principles and financial concepts and their application to individuals' everyday life [48]. In mathematics, calculating skills as well as understanding of concepts such as percentages and compound interest are important skills from the financial and entrepreneurship education point of view. Consumer skills are taught in home economics and social sciences. According to the curriculum, a skillful consumer is economically, ecologically, and ethically aware when making consumption decisions and is well-informed of consumer rights and responsibilities. Finally, media skills, critical thinking, and ICT skills are taught in different school subjects, as well as in basic education [4]. As basic education ultimately aims at individuals' development into competent, emphatic, and critical citizenship, different approaches to financial education complement each other [49]. In the current Finnish curriculum, the objectives of transversal competencies as well as phenomenon- or project-based learning have enabled creating coherent and adequate entities in financial and entrepreneurship education.

Finland can be identified as an interesting case not only with its highly valued education system and innovative teacher methods, but also with its swiftly emerging startup culture and successful startups such as Rovio and Supercell in the gaming industry [50]. Entrepreneurship education in Finland has co-operated with an intervention called Me and My City offered by Youth and Economy TAT [51] in which Finnish 6th and 9th graders have participated since its launch in 2010. The program has been vital for teachers to implement entrepreneurship education in the Finnish context, and it is based on the Finnish national curriculum. In the program, students visit this learning environment after having engaged in class-based work emphasizing entrepreneurship and basic economic concepts that the classroom teacher has prepared after participating in teacher training. The 6th grade learning environment models society, and the students take occupational roles as they act in the learning environment. The 9th grade learning environment models business management from the corporation point of view. Integrated to curriculum studies, the study modules prepare students with the necessary background information to function in the learning environment where students engage in entrepreneurial activities, on the one hand, and behave as consumers and citizens, on the other hand. Learning objectives include strengthening skills related to entrepreneurship, economic and working life, interaction skills and media literacy, and ICT skills.

1.3. Expectancy-Value Theory and Teacher Self-Efficacy

The Expectancy-Value Theory of Motivation, or simply the Expectancy-Value Theory (EVT), introduced by Eccles-Parsons and colleagues [22] and updated into Situated Expectancy-Value Theory (SVT; [33]), was constructed to study individuals' beliefs about how well they will do on upcoming tasks. These ability beliefs are defined as "the individual's perception of his or her current competence at a given activity", in other words, how much individuals *expect* to succeed in a task or activity [52]. They also relate to how much *value* or *importance* is given to a specific activity and success in this activity, and vice versa, the perceived *cost* refers to the negative association with engaging in a task: what other valued tasks must be given up to fulfill a specific task, and the anticipated *effort* in what is needed for task completion [22]. These task values are also related to an individual's identity. Values may also initially motivate behavior, but the individual's expectations about the ability to perform the behavior need to be included in the belief about the ability to succeed [53].

The way expectancies for success are postulated in the expectancy-value theory are closely related to other motivational theories, namely, the conceptual strand of Bandura's social cognitive theory (SCT; [54]). According to Bandura [55], self-efficacy, or efficacy

expectations, refers to an individual's belief about the capability to carry out an action—not on the actual ability to perform this action, which relates back to expectancy-value theory and its' postulation of self-concept of ability [22]. This tradition is of relevance in the present study, where we study different perspectives or factors of future teachers' efficacy beliefs—namely, beliefs about capability. Teacher self-efficacy is paramount to the success of teachers' performance and thereafter, pupils' academic performance, in addition to pedagogical content knowledge [31], which is defined as knowledge of content and the abilities to teach that content [24]. Self-efficacy research also emphasizes how teacher self-efficacy should be assessed to reflect confidence in functioning in a particular domain instead of global or general teaching ability [55,56]. Self-efficacy beliefs of preservice teachers, particularly, are important to have a sense of how they perceive their strengths and preparedness as future teachers, as the study of Çakiroglu, Çakiroglu and Boone [57] shows. Moreover, the study of Sharp and colleagues [58] among prospective teachers showed how teachers' self-efficacy in teaching particular literacy skills and actual literacy knowledge required to teach these skills increase over time.

Gibson and Dembo [59] were among the first to scale teacher efficacy. In their research, the components of the teacher efficacy scale were (a) perceived teaching efficacy and (b) outcome expectations. Tschannen-Moran and Hoy [60] specified teacher efficacy based on Bandura's [54] social cognitive theory and Rotter's [61] locus of control. The teachers' collaborative role has been recognized as pivotal in teacher efficacy scale studies. For example, Malinen and colleagues [62] explained teacher self-efficacy as efficacy in instructions, efficacy in collaboration, and efficacy in managing behavior. Overall, teacher efficacy scaling has been an adequate tool in approaching teachers' judgement of their capabilities in supporting pupils' engagement.

According to Klassen and Chiu [56], little is known, however, on how teacher self-efficacy is related to teaching experience in years of practice, and only few studies have focused on the understanding of the role of values and ability beliefs of preservice teachers, in particular [63]. Considering teacher students progressing into teachers in their career paths, perceptions of levels of competency within the field may change, as introduced by Dassa and Nichols [24]. In general, though, self-efficacy beliefs were originally hypothesized as being fairly stable according to Bandura [54], but research has found contradictory results. Furthermore, occupational self-efficacy and teaching experience in years does not go hand in hand with physical age [56].

In entrepreneurship education, self-efficacy has been associated with entrepreneurial attitude and working intentions [64] as well as business-related skills and attitudes; for example, developing products and market opportunities and building an innovative environment [65]. Salgado [66] has also studied teachers' readiness to teach entrepreneurial content. According to her study, teachers' experience did not correlate with entrepreneurial orientation implicating that the worlds of business and education are not aligned in all respects. In the Finnish context, previous research by Seikkula-Leino and colleagues [67] found a need expressed by teachers in coordinating entrepreneurship educating at the school level in terms of aims and practices. Teachers' learning in the context of entrepreneurship education should deserve more attention. In response, the present study examines future Finnish teachers' readiness to teach 21st century competencies within the expectancy-value theoretical framework [22] and their teaching self-efficacy in working life and entrepreneurial competencies, as well as financial literacy.

2. Materials and Methods

2.1. Sample

The data of this study ($n = 591$) was collected from class teacher and subject matter teacher students studying an introductory course in educational psychology. In Finland, the class teachers study this course during the first fall of their Bachelor-level studies. In the case of the subject matter teachers, these studies are part of their Master program and take place after studying their own subject matter discipline for several years. There were four

implementations in the fall of 2019 and fall 2020: two for pre-service subject matter teachers and two for pre-service class teachers in each year. Among the former, only few participants were specializing in adult education, while the majority were future subject matter teachers who represented various disciplines alongside educational sciences. The mean age of all participants was 27 years ($SD = 8.7$, Median = 24) and the majority (82%) were female. Of these future teachers, 18% were to become teachers of financial subjects (social sciences, home economics, or math) and 10% teachers of STEM subjects. The participants filled in an online questionnaire either during their first lecture break or prior to the first lecture. Participation was voluntary and no rewards were given for participation. The response rate was 71.6%.

2.2. Measures

The 21st century competencies were assessed with a questionnaire based on an evaluation framework regarding these competencies as articulated by the Finnish curricula [3,5,32] as well as situated expectancy-value theory [22,52]. The 21st Century Competence Evaluation Framework was formulated for teachers to utilize in evaluating and supporting their own teaching of the broad-based competencies. The seven transversal competencies of the curricula are divided into 3–4 themes and 5–9 sub-level competencies. The broad-based competencies were assessed with a questionnaire of 123 items based on the evaluation framework (three dimensions of each of the 41 competencies [32]). Each top- and sub-level competence (see Figure 2 and Table 1) was evaluated on a six-point Likert scale ranging from 1 = “completely disagree” to 6 = “completely agree” by the participants on three expectancy-value dimensions: teaching self-efficacy (TSE): “I am good at instructing this”; interest: “Interests me”; and cost: “Teaching this is part of my teacher duties”. In the analyses, the cost item was reverse coded to represent the experienced cost [22,33] of teaching the competence.

Table 1. Broad-based competencies and the descriptive statistics of their three expectancy-value dimensions.

Broad-Based Competence	Example Sub-Level Competence, <i>n</i> of Items ^a		Teaching Self-Efficacy (TSE)			Interest			Cost		
			<i>M</i>	<i>SD</i>	Alpha	<i>M</i>	<i>SD</i>	Alpha	<i>M</i>	<i>SD</i>	Alpha
T1 Thinking and Learning to Learn	Critical Thinking	5	3.89	0.89	0.811	5.42	0.71	0.799	2.07	1.15	0.885
T2 Cultural Competence, Interaction, and Self-Expression	Self-Awareness and Emotional Skills	3	3.85	1.00	0.671	5.20	0.81	0.573	2.12	1.20	0.805
T3 Self-Care and Managing Everyday Life	Promoting Well-being and Health	6	4.07	0.96	0.788	5.12	0.83	0.819	2.33	1.26	0.895
T4 Multiliteracy	Self-Expression and Communication	3	3.56	1.04	0.713	4.89	0.94	0.627	2.47	1.31	0.769
T5 Information and Communication Technology (ICT) Competence	Computational thinking	9	3.03	0.98	0.911	4.06	1.04	0.916	3.32	1.18	0.916
T6 Working Life Skills and Entrepreneurship	Entrepreneurial mindset	8	3.62	1.02	0.876	4.76	1.01	0.862	3.14	1.36	0.869
T7 Participating, Influencing, and Building a Sustainable Future	Agency in a Democratic Society	7	3.89	1.01	0.892	5.09	0.85	0.846	2.37	1.26	0.906
<i>M</i> Total	T1–T7	41	3.70	0.72	0.863	4.94	0.64	0.850	2.55	0.99	0.903

Likert scale 1–6. ^a *n* of items = Each expectancy-value dimension measured with this number of items.

Financial capability was measured with objective financial knowledge and subjective financial capability including subjective financial knowledge, financial behavior, financial attitude, and financial confidence [68]. Objective financial knowledge was assessed with eight questions. These scores were summed up to form a score from 1–8. The questions were formulated to measure the understanding of financial concepts: interest compounding, inflation effects on the value of money, the relationship between bond prices and interest rates, interest payment differences on shorter and longer mortgages, and stock diversification and risk [69–71]. The questions were multiple choice with three answer options (e.g., “Is the following statement true/false/don’t know: Investment with high profit holds normally high risk) or four answer options (e.g., “Which investment gives you the best profit in long run?” Savings account/stock market/debenture stock/don’t know).

Subjective financial capability was assessed with five items of participants’ subjective financial knowledge [72,73] financial behavior, financial attitude, and financial confidence [74,75]. These questions measured participants’ self-assessment of their capacity to solve financial problems, interest in financial issues, and their confidence to manage daily finances. The questions were evaluated on a six-point Likert scale ranging from 1 = “very low” to 6 = “very high”.

As teacher background factors, we use the following information: taught subject (i.e., financial, STEM, or other, such as humanities), age, and gender (F/M).

2.3. Data Analysis

To address RQ1, in our initial analyses, we examined the future teachers’ expectancy-values in teaching the seven transversal competencies of the Finnish curricula of basic education. According to the Finnish curricular framework, we calculated sum composite variables of these seven competencies on the teaching-related dimensions of (a) teaching self-efficacy (TSE), (b) interest, and (c) cost. The variables showed internal consistencies of (a) adequate to excellent on the teaching self-efficacy (Cronbach’s alphas ranging from 0.671 to 0.911), (b) acceptable to excellent on the interest (0.573 to 0.916), and (c) good to excellent on the cost (0.769 to 0.916) dimension. As the teaching self-efficacy dimension was the least skew and the most normally distributed among all competencies and dimensions, we relied on its internal consistency to structure the sum variables. We also calculated a total mean of all transversal competence areas on all examined dimensions, and their respective alphas were (a) 0.863 for teaching self-efficacy, (b) 0.850 for interest, and (c) 0.903 for cost.

To analyze the differences between different competencies and their expectancy-value dimensions, we evaluated the relevant descriptive statistics (Table 1). To further examine the relationship between teaching self-efficacy and the relative cost of teaching these certain competencies as presented in Figure 1, we subtracted cost from the respective TSE, and present the results of this TSE-cost ratio with 95% confidence intervals (Figure 3). We chose to further examine the individual items of the competence areas regarding working life and entrepreneurship competencies portraying the second lowest mean on teaching self-efficacy (Table 2; Figure 4). We also conducted paired-samples *t*-tests between each top- and sub-level competence area and their mean total on the teaching self-efficacy dimension.

To address RQ2, we examined differences among subject matter teacher students as well as age and gender differences in financial capability. We also examined differences in self-efficacy in teaching different aspects of financial literacy. Regarding objective financial knowledge and subjective financial capability, the internal consistencies were excellent: 0.788 and 0.851, respectively. With independent samples *t*-tests, we studied the differences in objective financial knowledge and subjective financial capability as well as teaching self-efficacy in financial literacy (top- and sub-level items) between (a) teachers of financial and other subjects, (b) teachers of STEM and other subjects, and (c) genders. We then present the Pearson correlation coefficients between the examined measures of financial

capability and TSE. Finally, we ran further regression analyses on TSE in entrepreneurship competencies with the independent variables of objective financial knowledge, subjective financial capability, TSE in consumer skills, teaching financial subjects, and teaching STEM subjects (Y/N –dummy coded), as well as gender (female) and age (continuous).

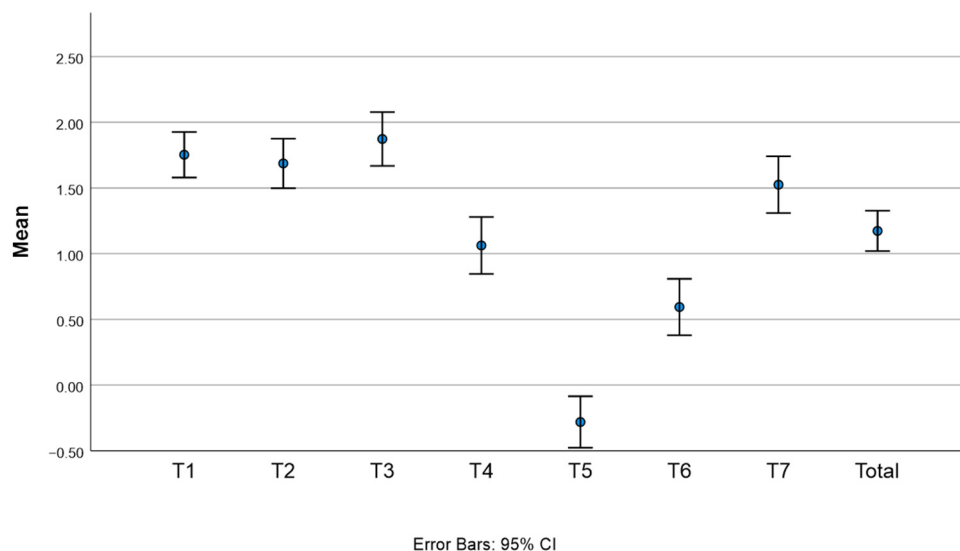


Figure 3. The results of the teaching self-efficacy (TSE)-cost ratio of the seven curricular broad-based competencies with their 95% confidence intervals. Broad based competence T1 = Thinking and Learning to Learn; T2 = Cultural Competence, Interaction, and Self-Expression; T3 = Self-Care and Managing Everyday Life; T4 = Multiliteracy; T5 = Information and Communication Technology (ICT) Competence; T6 = Working Life Skills and Entrepreneurship; T7 = Participating, Influencing, and Building a Sustainable Future.

Table 2. Financial, working life, and entrepreneurship sub-level competencies with respective descriptive statistics of the different expectancy-value dimensions.

Sub-Level Competence	Teaching Self-Efficacy (TSE)		Interest		Cost	
	M	SD	M	SD	M	SD
Consumer Skills (T3)	3.78	1.12	4.89	1.15	2.95	1.43
Working Life Skills (T6)	3.92	1.17	5.14	0.97	2.96	1.54
Functioning in a Global Environment (T6)	3.93	1.23	5.07	1.06	2.44	1.44
Entrepreneurial Mindset (T6)	2.74	1.33	3.86	1.52	3.83	1.49
Collaboration (T6)	4.57	1.05	5.43	0.86	1.28	1.11
Working in Projects (T6)	3.99	1.18	4.63	1.25	2.38	1.28
Networking (T6)	3.39	1.28	4.52	1.28	3.27	1.34
Businesses and Industries in the Surrounding Area (T6)	2.84	1.30	3.95	1.39	3.88	1.41
Entrepreneurship (T6)	2.56	1.34	3.62	1.58	4.08	1.51

Scale 1–6.

Significance levels for *p*-values used in all tests were 0.05. All analyses were conducted with SPSS Statistics version 26.

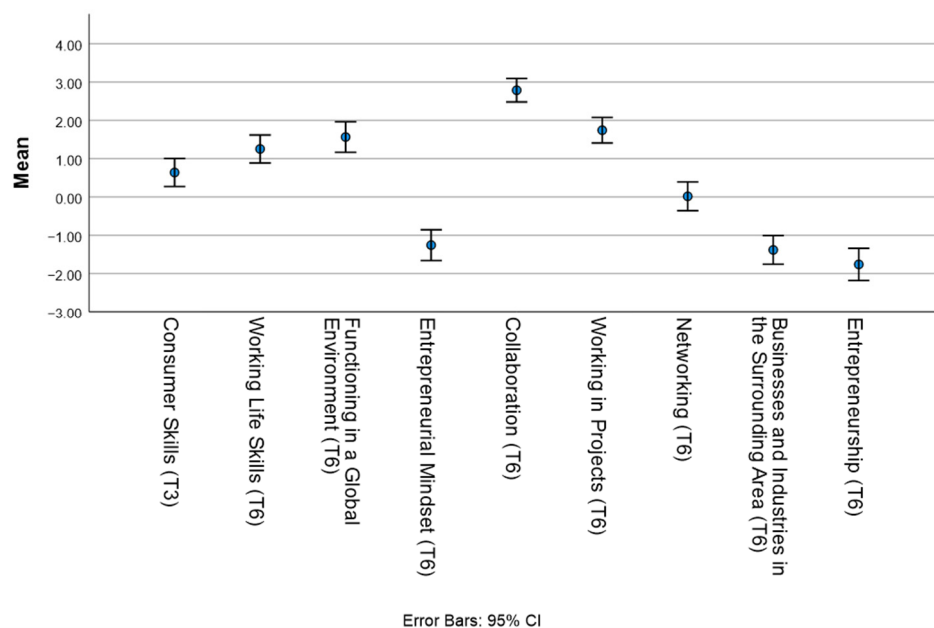


Figure 4. The results of the teaching self-efficacy (TSE)-cost ratio of the financial, working life, and entrepreneurial sub-level competencies and their 95% confidence intervals.

3. Results

3.1. Expectancy-Values Regarding the Teaching of Broad-Based Competencies

Table 1 shows the means, standard deviations and Cronbach alpha coefficients of the study variables assessing the expectancy-value dimensions of the top-level broad-based competencies with examples of the sub-level competencies.

The seven curricular broad-based competencies appeared very differently in the data regarding the future teachers' expectancy-values. The dimension of interest was very skewed, and the future teachers expressed high interest in the competencies overall. Their self-efficacy in teaching the competencies was also very high. However, significant differences between self-efficacy in teaching the broad-based competencies were found. The conducted paired-samples *t*-tests between each top- and sub-level competence area and their mean total on the teaching self-efficacy dimension showed that all observable differences were statistically significant ($t(580-590) = |2.869-22.196|$, $p < 0.01-0.001$) apart from consumer skills, which was equal to the mean total of all competencies ($t(375) = -792$, $p > 0.05$). The future teachers expressed lowest self-efficacy in teaching ICT competencies, including multiliteracy, as well as working life skills and entrepreneurship. These competencies were also highest regarding these future teachers' experienced cost as compared to other competencies. In other words, future teachers did not see teaching these competencies as a central part of their teaching duties [22,33]. As according to our framework proposed in Figure 1, when looking at the TSE-cost ratio (Figure 3), the competencies scoring lowest, even below zero, were ICT competence (T5) as well as working life skills and entrepreneurship (T6).

As shown in Table 2, a closer look at individual items within these financial, working life, and entrepreneurship competencies revealed that the three sub-level competencies of entrepreneurial mindset, familiarizing pupils to the businesses and industries in the surrounding area, and entrepreneurship were rated lowest on the teaching self-efficacy dimension. However, interestingly, self-efficacy of the future teachers in teaching consumer skills was of a higher level (part of the broad-based competence of Self-Care and Managing Everyday Life, T3). The experienced cost of teaching the individual items mentioning "entrepreneurship" or "business" (3.83–4.08, Table 2) was also high and above the average of the overall mean total of transversal competence (2.55, Table 1). When looking at the TSE-cost ratio (Figure 4) of these sub-competencies as according to the Figure 1 framework, the

individual items scoring well below zero were entrepreneurial mindset, entrepreneurship, and familiarizing the students with the businesses and industries in the surrounding area. Thus, we chose these individual entrepreneurial competencies to examine more closely in our further analyses of teaching self-efficacy.

3.2. Teaching Self-Efficacy in Entrepreneurial Competencies, Objective Financial Knowledge, Subjective Financial Capability, and the Related Teacher Background Factors

Regarding our second research question on the relations between TSEs in entrepreneurial competencies, objective and subjective financial capability, and specific background factors, we first present the results of the groupwise comparisons of the continuous variables. Future subject matter teachers whose studies included financial subjects had better subjective financial capability than the ones specializing in humanities and other STEM subjects ($t(109) = 3.192, p < 0.05; M(SD)$ in Table 3). Additionally, their TSE in consumer skills was better ($t(109) = 3.192, p < 0.05$). No significant difference was found regarding objective financial knowledge. Compared to future teachers of humanities and other subjects, STEM subject teachers had better objective ($t(102) = 3.103, p < 0.001$) and subjective financial capability ($t(109) = 2.035, p < 0.05$) as well as better TSE in consumer skills ($t(256) = 2.310, p < 0.05$). Males and females did not differ in their subjective financial capability, but the analyses revealed better objective financial knowledge of male teacher students ($t(102) = -1.944, p < 0.05$). Age was positively correlated with both future teachers' subjective financial capability ($r = 0.252; p < 0.01$) and objective financial knowledge ($r = 0.298; p < 0.01$), as well as self-efficacy in teaching entrepreneurship ($r = 0.229, p < 0.05$) and entrepreneurial mindset ($r = 0.200, p < 0.05$; Table 4).

Table 3. The group means and standard deviations on all the examined dimensions of financial capability as well as working life and entrepreneurial competencies.

Group	Objective Financial Knowledge ^a	Subjective Financial Capability	TSE in Entrepreneurship	TSE in Entrepreneurial Mindset	TSE in Businesses and Industries ...	TSE in Consumer Skills	TSE in Entrepreneurial Competencies
Subject	0.065	<0.001	0.422	0.361	0.071	0.017	0.331
Financial	4.70 (2.13)	4.45 (0.93)	2.50 (1.36)	2.63 (1.32)	2.94 (1.45)	3.99 (1.16)	2.69 (1.25)
Other	3.97 (2.32)	3.81 (1.02)	2.47 (1.29)	2.69 (1.28)	2.70 (1.19)	3.68 (1.12)	2.63 (1.09)
Subject	<0.001	0.022	0.446	0.307	0.146	0.011	0.443
STEM	5.71 (1.31)	4.46 (1.01)	2.47 (1.36)	2.57 (1.38)	2.85 (1.38)	4.09 (1.21)	2.62 (1.28)
Other	3.91 (2.31)	3.92 (1.02)	2.44 (1.29)	2.68 (1.26)	2.63 (1.20)	3.67 (1.10)	2.60 (1.08)
Gender	0.027	0.058	0.453	0.092	0.336	0.093	0.198
Female	3.92 (2.32)	3.91 (1.03)	2.47 (1.32)	2.63 (1.28)	2.74 (1.26)	3.70 (1.12)	2.62 (1.12)
Male	4.84 (2.07)	4.24 (1.00)	2.49 (1.24)	2.84 (1.29)	2.80 (1.21)	3.88 (1.18)	2.73 (1.14)

One-sided *p*-values to indicate statistical significance in group differences. TSE = teaching self-efficacy. ^a scoring 0–8, other variables Likert 1–6.

Table 4. Descriptive statistics and parametric correlations between examined variables.

	<i>n</i>	<i>M</i>	<i>Med</i>	<i>Mod</i>	<i>SD</i>	1	2	3	4	5	6	7
1 Objective Financial Knowledge ^a	104	4.20	5.00	5.00	2.27	1						
2 Subjective Financial Capability	111	4.01	3.80	3.40	1.03	0.365 **	1					
3 TSE in Entrepreneurship	368	2.47	2.00	1.00	1.30	0.209 *	0.377 **	1				
4 TSE in Entrepreneurial Mindset	370	2.68	3.00	2.00	1.29	0.262 **	0.396 **	0.809 **	1			
5 TSE in Businesses	369	2.75	3.00	3.00	1.25	0.039	0.320 **	0.582 **	0.526 **	1		
6 TSE in Consumer Skills	376	3.74	4.00	4.00	1.13	0.191	0.390 **	0.242 **	0.319 **	0.341 **	1	
7 Age	650	27.72	24.00	21.00	8.61	0.298 **	0.252 **	0.180 **	0.205 **	0.011	0.060	1

^a Score 0–8. TSE = Teaching self-efficacy. * $p < 0.05$, ** $p < 0.01$.

The Pearson correlations between financial capability and teaching self-efficacies in the related broad-based competencies are shown in Table 4. All pairwise correlations between

the subjective evaluations were statistically significant and positive, indicating related phenomena. Objective financial knowledge correlated strongest with subjective financial capability but not as strongly with the teaching self-efficacy variables. Based on these correlations and the above-mentioned observations regarding the TSE-cost phenomenon (Figures 1 and 4), we decided to group the three entrepreneurship-related expectancy-value items together as entrepreneurial broad-based competencies. The respective alphas were 0.843 for TSE, 0.811 for interest, and 0.820 for cost. In a further regression analysis, we focus on analyzing the TSE in entrepreneurial competencies. Parametric correlations with the related cost and interest dimensions were -0.538 ($p < 0.001$) and 0.676 ($p < 0.001$), respectively, and the bivariate correlation of interest and cost was -0.452 ($p < 0.001$).

Finally, we ran regression analyses on which of the teacher background factors predicted TSE in entrepreneurial competencies (Table 5). Our model fit the data ($F(7.95) = 4.560$; $p < 0.001$), and the best predictors were the future teachers' subjective financial capability ($\beta = 0.369$, $p < 0.05$, $SE = 0.121$) and their TSE in consumer skills ($\beta = 0.200$, $p < 0.05$, $SE = 0.094$).

Table 5. Regression model of teaching self-efficacy (TSE) in entrepreneurial competencies.

Effect	Estimate	SE	95% CI		<i>p</i>
			LL	UL	
Intercept	0.041	0.559	−1.070	1.151	0.942
Objective Financial Knowledge ^a	0.002	0.051	−0.099	0.102	0.971
Subjective financial capability ^b	0.369	0.121	0.129	0.609	0.003
Teaching financial subjects	−0.088	0.245	−0.574	0.398	0.721
Teaching STEM subjects	−0.308	0.291	−0.886	0.271	0.293
Female	−0.147	0.243	−0.630	0.335	0.546
Age	0.016	0.012	−0.008	0.040	0.186
TSE in Consumer Skills ^b	0.200	0.094	0.013	0.387	0.036

CI = confidence interval; LL = lower limit; UL = upper limit. ^a Score 0–8. ^b Likert 1–6.

4. Discussion

In this study, we examined future Finnish teachers' readiness to teach 21st century competencies and financial literacy in the framework of expectancy-value theory and teacher self-efficacy. According to expectancy-value theory, an individual's expectations on success and the value given to the task at hand predicts which task is chosen, how much effort is given to the task, and eventually, how one succeeds in the chosen task [52]. We explored future Finnish teachers' expectancy-value beliefs regarding teaching broad-based competencies using the 21st century competence dimensions from the Finnish curricula [5,32] with the specific intention to reveal relevant instructional pitfalls through contrasting their experienced teaching self-efficacy (TSE) with the relative cost, as presented in our Figure 1 framework. All study results are presented in Table 6. Overall, the teacher students expressed very high interest in the competencies, which would indicate that they find them valuable goals of education as such. TSE was also high overall, but the competence areas of ICT as well as working life skills and entrepreneurship were rated low. Additionally, the experienced cost of teaching these broad-based competencies was the highest. Our analyses showed that in some cases the teaching self-efficacy in relation to the experienced cost was quite low; that is the reason we decided to examine the individual items within these pitfalls further.

Table 6. A table systematizing the study's findings.

Research Question	Findings
RQ1. What are the greatest pitfalls in the future teachers' readiness to teach the 21st century competencies based on their expectancy-value beliefs (i.e., interest, teaching self-efficacy, and cost)?	<ol style="list-style-type: none"> 1. Interest skewed and high in all 21st century competencies 2. Lowest TSE and highest cost in ICT and multiliteracy as well as working life skills and entrepreneurship 3. TSE-cost ratio (Figure 1) in ICT competence as well as working life skills and entrepreneurship most negatively balanced (i.e., high cost and low TSE) 4. Entrepreneurial mindset, familiarizing pupils to the businesses and industries in the surrounding area, and entrepreneurship lowest on the TSE dimension; TSE in consumer skills at an average level
Are there some aspects within the working life and entrepreneurship competencies as well as financial literacy that the future teachers find particularly difficult or burdensome to teach, as according to Figure 1?	<ol style="list-style-type: none"> 5. Experienced cost of teaching the individual items mentioning "entrepreneurship" or "business" the highest 6. TSE-cost ratio (Figure 1) of entrepreneurial mindset, entrepreneurship, and familiarizing the students with the businesses and industries in the surrounding area at below zero
RQ2. How are teaching self-efficacies (TSE) in the different aspects of entrepreneurial competence and teacher background factors such as taught subject, age, and gender related to the future teachers' objective and subjective financial capability?	<ol style="list-style-type: none"> 7. Financial subject teachers higher on subjective financial capability and TSE in teaching consumer skills 8. STEM subject teachers higher on objective and subjective financial capability as well as TSE in consumer skills 9. Males had better objective financial knowledge 10. Age was positively correlated with subjective financial capability and objective financial knowledge as well as self-efficacy in teaching entrepreneurship and entrepreneurial mindset 11. Objective financial knowledge correlated strongest with subjective financial capability but not as strongly with the TSE variables 12. Correlations between the subjective evaluations were statistically significant and positive 13. A combined entrepreneurial competence area had good internal consistencies, with the dimension wise alphas of 0.843 for TSE, 0.811 for interest, and 0.820 for cost 14. Significant correlations of TSE in entrepreneurial competence with respective cost and interest dimensions were -0.538 and 0.676 and the bivariate correlation of interest and cost was -0.452
Most importantly, what factors predict future teachers' TSE in entrepreneurship: financial capability, TSE in consumer skills, or the background factors of taught subject, age, and gender?	<ol style="list-style-type: none"> 15. Best predictors of TSE in entrepreneurial competencies in the regression analysis were the future teachers' subjective financial capability and their TSE in consumer skills

Looking closer into the individual items within the entrepreneurship and working life competencies, we observed the lowest teaching self-efficacy in relation to cost in the future teachers' TSE in entrepreneurship, entrepreneurial mindset, and familiarizing pupils to the businesses and industries in the surrounding area. These were also the items with highest experienced cost of teaching as well as lowest interest. As an intriguing contrast, consumer skills (initially classified within the domain of self-care and managing everyday life) was at a higher level on TSE, equal to the mean total of all transversal competencies.

The broad-based competencies in the Finnish curricula are "a totality of knowledge, skills, values, and attitudes" [4], which makes them all tightly interconnected. This overlap was indeed observed also in our study. However, future teachers do seem to associate certain topics more tightly with this curricular entity, such as metacognitive, socio-cultural, and sustainability competencies, whereas ICT and entrepreneurial competencies are experienced as more demanding topics to teach (i.e., higher cost). In fact, although entrepreneurial alertness, for example, is recognized as pivotal for individuals to thrive in the future economic landscape [46,76], entrepreneurial working life competencies, in this sample, stand out clearly regarding the future teachers' experienced cost as well as lack of general interest and self-assessed instructional competence. This is worrisome also from the point of view of the pupils' general understanding of the economic systems and their components [9],

which have undeniable impact on the planet's ecosystem [77], as well as their acquisition of the skills of building sustainable financial well-being in societies [7]. In case the teachers truly wish to educate fully competent citizens, it is important that they give emphasis to the work and transformative potential of all sectors in society.

We also explored the future teachers' background factor differences in entrepreneurial and financial competencies. Apart from self-efficacy in teaching consumer skills and familiarizing pupils to the businesses and industries in the surrounding area, age was positively correlated to all examined financial literacy and TSE dimensions, and the correlation was the strongest to objective financial knowledge and subjective financial capability. Males had slightly better objective financial knowledge than females. Regarding teaching self-efficacy (TSE) in broad-based competencies related to entrepreneurship and working life, specializing in the teaching of financial subjects correlated with the future teachers' self-efficacy in teaching consumer skills as well as familiarizing pupils to the businesses and industries in the surrounding area. There were no significant gender differences regarding broad-based competence TSEs.

Studies have shown that pedagogical content knowledge and teacher self-efficacy go hand in hand [24,30,31], but also that content knowledge is not predictive of self-efficacy, at least among prospective teachers [58]. Furthermore, although teachers' self-efficacy beliefs are found to be rather stable according to the research tradition of Bandura [54], studies have found teachers' confidence in teaching skills to increase from the early years into further years of teaching experience [56]. However, according to our data, studying to be a teacher of a specific subject was related to the specific teaching self-efficacy. We need to remember that those future Finnish subject matter teachers who are carrying out pedagogical studies to become teachers usually have already finished their content studies. Teaching financial subjects was strongly positively associated with TSE in familiarizing pupils with the business and industrial environment. Reaching out to regional communities and improving co-operation among stakeholders has been recognized to challenge teachers in also previous research [21].

Teaching self-efficacy in consumer skills was higher than other TSE variables. Age did not correlate with TSE in consumer skills, although it did correlate significantly with TSE in entrepreneurship and entrepreneurial mindset. It seems that teachers are more generally confident with teaching consumer skills. Consumer education's relevance to everyday life has been noted in earlier studies and consumer skills are considered as everyday knowledge [78]. Personal experiences can enable teachers to teach consumer skills. However, as Pajari and Hermoinen [21] state, consumer education requires not only familiarity in consumer issues, but also willingness to try to expand the content, as well as further extend it to the theoretical perspectives [78]. Implementation of consumer education in schools requires teachers to be not only familiar with consumer issues, but also that the teachers express their personal interest in the issues, willingness to make an effort, and trust in their own competencies as consumer educators [21].

Teachers may, however, express a high level of interest or value in each subject or specific skills while also showing a lack in self-perceived competencies in teaching specific skills at school [79]. As Björklund [17] notes, teachers overall express uncertainty to complete the financial literacy questions of Lusardi and Mitchell [80]. In our study, however, teachers' objective financial knowledge and subjective financial capability were associated to teaching subject rather than to the distinction between measured knowledge and expressed subjective capability. Our questions that measured objective financial knowledge were based on Lusardi and Mitchell [69]. The measurement has been critiqued of its emphasis on numeracy skills [81]. In line with this, in our data, STEM teachers scored higher objective financial knowledge than teachers of financial subjects. It was interesting that objective financial knowledge, gender, or teaching STEM did not predict TSE in entrepreneurship. Interest and ability in calculations may not be sufficient for developing interest in entrepreneurship.

4.1. Practical Implications

As practical implications, the present study suggests, in line with the study of Björklund [17], that teacher training should be developed according to teachers' experiences of financial and entrepreneurship instruction. Entrepreneurial competencies and financial literacy should be included in teacher training programs with additional educational and technological scaffolding offered for in-service teachers. Our study highlights the need to support teacher self-efficacy and readiness in teaching both financial literacy and broad-based competencies across the entire teacher profession. As a potential solution, innovative and interactive teaching methodology could be utilized in both complementary training for in-service teachers, and as practical teaching tools by the teachers themselves.

4.2. Methodological Limitations

There are some methodological limitations of the present study that need to be addressed. The study participants attended teacher training and participation in the study was voluntary. Therefore, generalizability to all teachers and teacher students should be made with caution. Secondly, due to the COVID-19 pandemic, data collection timing needs to be considered as autumn 2019 and 2020 were quite different in terms of context, and therefore, participants' perspective on teaching certain broad-based competencies might be different from usual. In future studies, it is crucial to also study these topics among in-service teachers and teacher students after their training. Furthermore, as a potentially influencing factor on teacher students' skills and teacher self-efficacy, the educational stage of the teacher students is important to consider in future research.

5. Conclusions

To support future teachers' skills in teaching 21st century skills and financial literacy, examining their perceptions of teaching these themes is critical. Pupils' self-beliefs may be influenced by the perceptions of the surrounding adults, including teachers' expectations of their competence in a specific task [82]. The expectancy-value theory provides a framework for studying teachers' efforts in increasing not only their pupils' expectations of success [27], but also of their own. Expectancy-value theory strongly supports practicing teachers to identify their own motivational strategies and for the development of new ones in the classroom [27]. Understanding preservice teachers' teaching beliefs and expectations can also contribute to understanding motivational aspects regarding choice of the teaching career and future job satisfaction in the teaching profession [63].

The curriculum reform conducted in Finland aims to promote an integrative approach to teaching for pupils to understand the interdependencies between knowledge and skills learned in school subjects and life beyond the school context by structuring the knowledge, skills, values, and attitudes into transversal competencies [44]. In view of accumulated advantage, there are individual teachers who may already be interested in these competencies to begin with, and willing to put effort into teaching these competencies, while others are not. How shall we overcome this Matthew effect in financial and entrepreneurship education? Implementation of the curricula becomes difficult if teachers' self-efficacy does not match the curricular requirements.

In the Finnish school curriculum, entrepreneurship education and financial literacy are, after all, multidisciplinary phenomena. Financial contents are merely placed under social sciences, home economics, and math curricula. Consumer and entrepreneurial contents are taught, in addition to the previously mentioned subjects, in biology, crafts, and as a part of broad-based competencies [4]. However, all school subjects approach these contents from different viewpoints. Referring to the example of consumer contents, the objective in social sciences is to understand a specific phenomenon at the societal and global sustainability level. In home economics, crafts, and transformative skills, objectives are at the personal level. Carrying out phenomenon-based projects may help to integrate broad-based competencies and subject matter knowledge into meaningful entities that are of personal interest of the students [5]. Furthermore, entrepreneurship and financial education across

disciplinary boundaries is important. Therefore, as entrepreneurial skills and financial literacy may not be the core competence area of a history or a home economics teacher, for example, cross-disciplinary collaboration in both planning and implementation are called for to avoid subject-based restrictions. The educational infrastructure should enable effective collaboration, which should be managed as well as resourced at the national level.

Teachers face phenomena where individual skills and knowledge interact with the societal infrastructure and financial environment [10]. While consumption attitudes and financial literacy are seen to be primarily learned at home and from parents within consumer socialization, consumer education has emphasized the importance of financial literacy particularly among youth [83]. Moreover, the basis on which the Finnish basic education curriculum is built upon, that is, promoting equal opportunities for all, has become increasingly important. For individuals to navigate their way in the complex and changing economic climate with complicated financial products, the importance of entrepreneurship skills and financial capability of individuals is emphasized in the literature, as articulated by Hastings, Madrian and Skimmyhorn [11]. In a time of great global change, economic challenges, and overall uncertainty, Wigfield and Gladston emphasize [82] how pupils' motivation has a significant role in how they cope in such situations, particularly in the school context. There has been a universal need for financial literacy after the 2008 financial crisis and, moreover, the need will increase in the current global pandemic. Financial crises highlight the need for supporting education of financial literacy and an understanding of the current state of the macroeconomy in schools [84,85]. However, understanding of the macroeconomy alone does not support individuals' daily financial challenges. The pandemic, for instance, has had a significant impact on young adults' financial vulnerability and fragile work paths, and the importance of individuals' experiences, financial skills, and preparing for uncertainty and adversity are highlighted. In line with our innovative conceptual framework based on the expectancy-value theory (Figure 1) [22], and contributing to the elaboration of this theory with a focus on the *cost* component as suggested by Eccles and Wigfield [33], our results highlight an imbalance of future teachers' task-related expectancies (teaching self-efficacy) and costs in competencies related to ICT, entrepreneurship, and working life skills, regardless of their objective financial knowledge. From the perspective of our future generations having to tackle multifaceted and wicked global challenges [34], it is worrisome if such vital 21st century competencies remain as the weakest links in the repertoire of our future educators.

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