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Formative Assessment in Upper Secondary Schools: Ideas, Concepts, and Strategies

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Abstract: Recently, the European Commission issued a report on how to implement various assessment strategies in secondary schools. In particular, the Working Group on Schools emphasized the need to implement and balance assessment strategies that address both formative and summative aspects of learning. This study involves 716 Italian upper secondary teachers to highlight the ideas and concepts of formative assessment in Italian schools, to explore how teachers apply formative assessment strategies daily in their classrooms, and to understand whether formative assessment strategies support students' learning processes. Through an analysis of quantitative and qualitative survey data collected during the school year of 2023–2024, the study explores the strategies used and strengths and weaknesses experienced by the teachers while applying formative assessment in classrooms. While the findings show that upper secondary teachers have heterogeneous and dissimilar ideas regarding formative assessments, they also indicate that using strategies based on feedback, self-assessment, Socratic methods, and metacognitive activities can foster students' critical thinking and learning processes. Additionally, this study offers insights on how to create a meaningful link between summative and formative assessment procedures.

Keywords: formative assessment; upper secondary school; assessment strategies

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1. Introduction

Recent research on educational practices has underlined the importance of assessment in the teaching and learning process. Effective assessment strategies can help students to achieve success in both educational and academic contexts (European Commission et al., 2023; Hattie & Clarke, 2018). Additionally, assessment strategies represent a fundamental element of the educational and training process (Taras, 2005). The European Commission (2022) emphasizes that a thorough exploration of various types of assessment can help students achieve their goals in relation to their learning needs, identifying the following two main forms of assessment in school systems: summative and formative. Summative assessment can be considered as an 'assessment of learning' (Stiggins, 2002), since it describes the levels of acquisition of students' learning goals. Formative assessment is focused on monitoring and supporting students' learning processes, so it can be considered as a learning activity itself. Formative assessment is known as 'assessment for learning'

(Chappuis & Stiggins, 2002). The European Commission et al. (2023) states that assessment should be integrated within learning processes, and formative assessment is an educational practice that aligns with this purpose.

The Organization for Economic Co-operation and Development (OECD, 2005) attempted to describe good formative assessment strategies in upper secondary education, outlining the key factors that determine the effectiveness of formative assessment activities. Several studies, such as Andersson and Palm (2017) and Kristiyanti et al. (2021), focus their analysis on students, but it is equally interesting and valuable to explore teachers' perspectives on formative assessment. In this paper, we present how formative assessment strategies are applied in Italian upper secondary schools. Teachers were asked to describe their thoughts and experiences with the use of formative assessment strategies in everyday activities within their classrooms. Additionally, the participants were asked to reflect on the potential relationship between formative assessment and students' learning processes. Finally, the teachers shared their views on how to effectively connect formative and summative assessment, highlighting the strengths and weaknesses of both assessment strategies. This study reveals an in-depth understanding of the ideas, difficulties, and experiences of Italian upper secondary school teachers regarding the implementation of formative assessment.

2. Literature Review

2.1. Formative Assessment: A Crucial Role

Formative assessment strategies play a fundamental role in teaching and learning processes when they are deeply integrated into instructional strategies and continuously affect pedagogical decisions (European Commission et al., 2023). Formative assessment strategies represent a dynamic process where teachers and students are engaged in activities that generate feedback, which is then used to define and improve motivation, self-regulation (Wafubwa, 2020), and learning outcomes (Black & Wiliam, 1998). Central to the process of formative assessment is the opportunity for students to enhance their own learning processes through ongoing feedback, regardless of whether their work is formally graded. A crucial function of formative assessment is the role that it plays in supporting students' self-regulated learning (Andrade & Heritage, 2017; Nicol & Milligan, 2006). By engaging with formative assessment strategies, students become more aware of their learning progress and the necessary efforts required to improve (Petty, 2004).

In developing the theory of formative assessment, Black and Wiliam (2009) proposed a model that highlights key processes through the following three core questions: Where is the learner going? Where is the learner now? How can the learner get there? Such questions are also included in the framework of Hattie and Timperley (2007), in which structured learning is seen as an iterative process in which students actively engage with these questions to identify goals, assess their progress, and refine strategies for improvement through ongoing feedback. This cyclical approach encourages students to reflect on their own learning processes through questions such as the following: What do I already know? What do good examples look like? What do I need to do to improve (Hattie & Clarke, 2018)? The role of feedback is crucial to the formative assessment cycle, and is supportive of both students' learning and teachers' planning (Mäkipää & Hildén, 2021). Through this process, students gain valuable insights into their learning progress and teachers receive continuous feedback from their students so that they can refine and upgrade their teaching strategies (Hattie, 2013). Shifting the focus from students' performance to teaching effectiveness can require changes in teacher beliefs and practices (Gamlem, 2015)—teachers must consider formative assessment strategies as a tool to enhance their pedagogical approaches rather than a way to evaluate students' outcomes. Teachers' perceptions of assessment influence

its implementation, as found by Brown (2004), who asserted that four major beliefs inform teachers' conceptions of assessment. Specifically, these four conceptions include beliefs about the role of assessment in (a) improving teaching and learning, (b) making students accountable, (c) making schools and teachers accountable, and (d) in terms of its relevance for teachers and students. Brown's conceptions are fundamental for this study, because they directly impact how teachers create the learning environment and whether they embrace or reject opportunities for meaningful educational improvements in the area of assessment.

2.2. Between Formative and Summative Assessment

This study builds on evidence-based models of teaching and learning, specifically the potential formative role of assessment processes in the school system (Hattie & Clarke, 2018; Black & Wiliam, 2010). Assessment strategies are a fundamental part of educational and instructional processes, since they involve several aspects of learning and teaching processes (Taras, 2005). The literature indicates how effective assessment strategies can lead students to educational success (European Commission et al., 2023; Hattie & Clarke, 2018). The European Commission (2022) emphasizes how assessment strategies should support students' achievement of their goals by adapting to their learning needs.

The following two main forms of assessment can be identified in the school context: summative and formative assessment. The summative side aims at identifying students' level of achievement in learning content (Sambell et al., 2012). This type of assessment can be defined as "assessment of learning" (Stiggins, 2002). Summative assessment is focused on students' academic achievement after content has been taught. In Italian upper secondary school contexts, this approach tends to prevail (Corsini, 2023; Grion et al., 2022). Instead, formative assessment aims at monitoring and regulating students' learning processes during teaching and learning activities; this kind of assessment can be defined as "assessment for learning" (Chappuis & Stiggins, 2002). Wiliam (2006) defined the key elements that make assessment a practice for learning, that is, a practice for supporting and activating learning before a final assessment is conducted. Assessment for learning elements involves the following:

- Clarifying and sharing learning intentions and success criteria with learners;
- Engineering effective classroom discussions, activities, and tasks that elicit evidence of student achievement;
- Providing feedback that moves learners on;
- Activating students as learning owners and instructional resources for one another.

According to Earl (2013) and Dann (2014), it is possible to consider assessment from a third perspective, named "assessment as learning". This perspective sees assessment strategies as spaces where students can learn and recognize the strengths and weaknesses in their work. Sambell et al. (2012) propose a framework for "assessment as learning" that overcomes the dichotomy between summative and formative assessment, recognizing that any assessment activity should support students' learning processes. These authors identify the following six main principles: emphasizing authentic and complex assessment tasks; developing students' abilities to evaluate their progress through direct own learning; providing rich informal feedback; providing rich formal feedback; offering extensive confidence-building opportunities and practice; and including an appropriate balance of summative and formative assessment.

2.3. Formative Assessment Strategies in Upper Secondary Schools

In a 2005 report, the Organization for Economic Co-operation and Development (OECD, 2005) described formative assessment strategies in classrooms and schools in the following eight education systems: Australia, Canada, Denmark, England, Finland, Italy,

New Zealand, and Scotland. From the study and comparison of practices in these countries, they defined the following key elements that qualify an activity as formative assessment:

1. The establishment of a classroom culture that encourages interaction and the use of assessment tools;
2. The establishment of learning goals and tracking individual student progress toward these goals;
3. The use of varied instruction strategies to meet diverse student needs;
4. The use of varied approaches to assess student understanding;
5. Feedback on student performance and the adaptation of instruction to meet identified needs;
6. The active involvement of students in the learning process (2005, p. 44).

Further to recognizing the importance of these elements, it is also crucial to define how formative assessment strategies can be implemented in everyday school practice. In Italian upper secondary schools, several authors have emphasized the value of practical assessment experiences that are not solely focused on summative aspects (Castoldi, 2023; Grion & Restiglian, 2019). The challenge is to make such assessment procedures sustainable and capable of responding to students' current needs without hindering their future needs (Boud, 2000).

Boud (2010) proposes the following eight key elements for good practice in formative assessment in higher education contexts, and these are also relevant for upper secondary schools: actively engaging students in learning tasks, creating authentic and investigative activities, involving students in the design of assessments, designing integrative tasks, becoming aware of learning and judgment, modeling and practice, working with peers, and giving and receiving feedback. It is possible to make these elements real through active teaching processes in which students are the protagonists of their own learning and assessment. Therefore, schools should help students in developing metacognitive and self-reflection skills to become autonomous assessors of their lifelong learning (European Commission, 2019).

Abd Halim et al. (2024) conducted a literature review of formative assessment at the secondary school level. The authors defined the following three emerging perspectives: diversity of assessment in the classroom, diversity of assessment strategies carried out by teachers to achieve learning objectives, and student learning development. In this way, "formative assessment is seen as being able to develop and improve student achievement in terms of knowledge and even skills and attitudes" (2024, p. 1179).

Formative assessment is recognized as a powerful strategy to enhance learning processes, but, on the other hand, it can be particularly challenging to implement formative assessment practices in everyday school practice (Yorke, 2001). Black (2015) identified the following three critical issues: the role and the relationship between formative and summative assessment, how assessment feedback can help learners to become reflective, and the daily challenges faced by teachers in applying formative assessment strategies in educational contexts. These three critical points suggest the following three open questions: Is it possible to integrate formative assessment practices with summative assessment? Which are the formative assessment strategies that most effectively support students' learning processes? How can these strategies be implemented in everyday teaching practices?

3. Research Design

3.1. Context of the Study

The Italian educational system is composed of 13 years split into the following three levels: primary school (1st to 5th grade), lower secondary school (6th to 8th grade), and upper secondary school (9th to 13th grade). After the lower secondary level, students

can choose between the following three main types of upper secondary schools: lyceum, technical, or vocational. Lyceum is the oldest type of secondary school in the Italian educational system. Primarily focused on academic study in preparation for university and higher education, approximately 55% of students select lyceum for upper secondary study. Technical and vocational schools both aim to develop professional competencies and skills in upper secondary students. Specifically, technical institutions offer courses for a broad range of professional and specialized technical fields and are selected by around 30% of students. Vocational institutions focus their curricula on specific types of practical jobs and are selected by 15% of students in preparation for direct entry to the labor market. This study involved teachers from all three types of upper secondary school.

Assessment in Italian upper secondary schools is both formative and summative and focuses on students' learning outcomes and processes. Teachers are responsible for the daily, periodic, and final assessment of students. Typically, upper secondary students undergo 2–3 mid-term tests during the first period of the school year (3–4 months) and, again, 2–3 mid-term tests during the second period of the school year (from January/February to May). Finally, the National Institute for the Evaluation of the Education and Training System carries out an external assessment of students. National standardized tests are administered during the 10th and 13th grades. These examinations verify students' learning results in the Italian language, mathematics, and the English language. Participation in these national tests during the fifth year is one of the mandatory requirements for admission to the final exam.

3.2. Aims and Research Questions

This study aimed to investigate how formative assessment strategies are used in Italian upper secondary schools. Particularly, we wanted to understand the ideas and practices of Italian teachers regarding formative assessment. The overall research question can be expressed as follows: according to Italian upper secondary teachers, is formative assessment an effective strategy to support teaching and learning processes? Specifically, we defined the following five sub-research questions:

(RQ1) What are the ideas and concepts of Italian teachers about formative assessment?
(RQ2) What formative assessment strategies are applied in Italian upper secondary schools?
(RQ3) Does formative assessment support the development of students' motivation, engagement, and metacognitive skills?
(RQ4) How can teachers integrate formative and summative assessment strategies?
(RQ5) Do Italian teachers feel prepared to arrange and implement formative assessment activities?

3.3. Participants, Procedure, and Instruments

Recruitment was based on a two-step sampling procedure. Firstly, we followed a stratified method, and then a simple random system. We received national data calculated by the Italian Ministry of Education, Ufficio V—Statistica. From these data, we used the following three main teacher characteristics to create the strata: gender, age, and upper secondary school type. Additionally, we calculated the minimum sample size using Slovin's formula. With a population of 322,380 Italian teachers in upper secondary schools and a margin of error of 3.75%, the minimum sample size was 710 participants and a 3.03% sampling error with a confidence level of 0.95.

Secondly, we sent an invitation to all Italian secondary schools and received 900 responses to the teacher questionnaire. Following the strata percentages, we randomly selected the participants, and the study involved 716 Italian upper secondary teachers. The characteristics of participants are shown in Table 1. The chi-square goodness-of-fit

test confirmed that the sample of teachers involved in this study followed the distribution of Italian cases according to the factors of "gender" (χ^2 = 3.588, df = 1, $p < 0.058$), "age" (χ^2 = 5.507, df = 3, $p < 0.138$), and "upper secondary school type" (χ^2 = 5.935, df = 2, $p < 0.051$). Therefore, we can state that the sample was representative of the population of Italian upper secondary teachers.

Table 1. Participants' characteristics.

Factor	Category	Occurrences	Count (%)
Gender	F	525	73.29
	M	191	26.71
Age	. . .–34	77	10.75
	35–44	128	17.88
	45–54	270	37.71
	55–. . .	241	33.66
Teaching experience (years)	. . .–9	242	33.79
	10–19	186	25.98
	20–29	155	21.65
	30–39	117	16.34
	40–. . .	16	2.24
Upper secondary school types	Lyceum	312	43.57
	Technical	272	37.98
	Vocational	132	18.45
Teacher's role	Class teacher	588	82.12
	Special education teacher	86	12.01
	Laboratory teacher	42	5.87
Subject	Art, music, and dance	57	7.96
	Foreign languages	114	15.92
	Literature, history, geography, etc.	210	29.33
	Mathematics, science, physics, etc.	275	38.41
	Technical and vocational subjects	54	7.54
	Religion	6	0.84
Formative assessment experience	High	60	8.38
	Moderate	278	38.83
	Low	30	4.19
	None	348	48.60

The majority of participants were female (73.29%) and older than 45 (71.37%). The teaching experience was quite low, since one-third of the participants had been teaching for fewer than 9 years. Most participants were working in a lyceum school (43.57%) and the most common subjects were represented by math/science and literature teachers (67.74%). Few teachers reported high levels of experience in incorporating formative assessment activities (8.38%), whilst many participants (48.60%) stated that they had no experience in organizing strategies based on formative assessment. It is worth contextualizing the sample by noting that Italian teachers tend to start their careers quite late. Additionally, Italian students (and their families) tend to choose lyceum schools, and the majority of teachers in our sample were similarly concentrated in this type of upper secondary school.

To answer the research questions, a quanti-qualitative research design was chosen. On the one hand, it was necessary for teachers to describe and explain their ideas about and activities with formative assessment in depth. Consequently, the qualitative aspects allowed teachers to be descriptive about difficulties and opportunities. On the other hand, it was fundamental to obtain quantitative data about the use of formative assessment strategies

in everyday activities in the classroom. For these reasons, we created a questionnaire composed of seven open-ended questions. Specifically, the questionnaire was split into quantitative and qualitative sections. The first section included variables focused on the demographic and school characteristics of the teachers, as follows: gender, age, teaching experience, upper secondary school type, role (class teacher, special education teacher, or laboratory teacher), subject taught by the teachers, and formative assessment experience. The second section included three open-ended questions focused on RQ1, RQ3, and RQ4, as follows:

1. What is formative assessment in your opinion?
2. In your opinion, do formative assessment strategies support students' learning processes? If so, in what ways? If not, how not?
3. Is there a link between summative and formative assessment? Are they independent or can formative assessment affect summative assessment?

The third section included four closed-ended questions focused on RQ2 and RQ5, as follows:

4. What formative assessment strategies do you apply in your classrooms?
5. Do the organization and the structure of Italian upper secondary school foster and/or promote activities based on formative assessment in the classroom?
6. Do you feel prepared to arrange formative assessment strategies in your classroom or would you need support?
7. Could you indicate the strengths and weaknesses of formative assessment strategies?

Specifically, the closed-ended questions #4 and #7 were based on multiple response sets. Teachers could select one or more options listed for both questions. Additionally, teachers could add further alternatives by selecting the option "other" and briefly explaining their response. Furthermore, teachers could not select any options. Instead, questions #5 and #6 were based on Likert scales, specified in the following paragraphs.

The open-ended questions were based on fundamental factors highlighted by the results of a number of studies, especially (1) the idea of formative assessment (Schildkamp et al., 2020); (2) the benefits of formative assessment strategies in developing students' learning processes (Stanja et al., 2023); and (3) the connection between summative and formative assessment (Gezer et al., 2021; Ismail et al., 2022).

Similarly, the list of options included in the closed-ended questions were based on the following studies: (4) the everyday use of formative assessment strategies (Dayal, 2021); (5) organizational and administrative issues (Crossouard, 2011); (6) teachers' preparation (Gotwals & Cisterna, 2022); and (7) strengths and weaknesses (Abbasi Kasani et al., 2020; Carney et al., 2022; Frunza, 2014). The questionnaire was self-administered online.

4. Data Analysis and Findings

In this section, we provide an overview of both the data analysis and findings in relation to our research questions. The questionnaire included items about teacher characteristics, as well as both closed- and open-ended questions related to our research aims. The responses to the closed-ended questions were analyzed with SPSS 29. The quantitative findings focused on frequencies and χ^2 analyses to highlight potential statistically significant differences among participants considering the socio-demographic and school characteristics listed in Table 1. Next, using qualitative analysis, we examined the teachers' descriptive responses to the open-ended sections of the questionnaire. Specifically, we coded the data with NVivo 14 on the basis of the following three phases recommended by Williams and Moser (2019): open coding, axial coding, and selective coding.

The data analysis as it relates to the research questions is presented in the following order. First, Section 4.1.1 reports how formative assessment strategies are applied in Italian upper secondary schools (RQ2). Then, in Section 4.1.3, we focus on the data related to RQ5 and Italian teachers' sense of preparedness for using formative assessment activities in their classrooms. Sections 4.1.4 and 4.2.2 highlight the data linked to RQ3 regarding the relationship between the use of formative assessment strategies and the development of students' motivation, engagement, and metacognitive skills. The data related to RQ1, focused on the ideas and the concepts of Italian teachers regarding formative assessment, are presented in Section 4.2.1, and, finally, the relationship between formative and summative assessment (RQ4) is presented in Section 4.2.3.

4.1. Quantitative Findings

4.1.1. Formative Assessment Strategies

First, we analyzed the options selected by the participants. In total, 67 participants (9.36%) did not choose any option, whilst 75 teachers (10.47%) stated that they did not use formative assessment strategies. More than half of the participants (396—55.31%) selected different formative assessment strategies. Ultimately, almost a quarter of the participants (178—24.86%) indicated further formative assessment strategies, choosing the option "other", but an analysis of the descriptions written by the teachers revealed that the examples they provided were actually summative strategies (written and/or oral tests). On the basis of these first observations, we checked if there were significant differences among school types and the teachers who applied or did not apply formative assessment strategies. The chi-square analysis showed that there were no differences ($\chi^2 = 3.948$, df = 4, $p < 0.413$). The list of options included in the multiple response set was composed of the following formative assessment strategies: different forms of feedback and comments on student tasks; self-assessment; peer-assessment; Q&A activities; several forms of quizzes conducted with apps such as Mentimeter, Kahoot, Slido, etc.; metacognitive activities such as brainstorming, mapping, etc.; the sharing of assessment rubrics; and observations of students' activities. Teachers added the following strategies: grades accompanied by a detailed written comment; mid-term tests without a formal grade; and activities with a "blue grade" (indicating a mistake but aimed at discussing the mistake). Table 2 shows the distribution of formative assessment strategies. In particular, it is important to highlight that the total number of formative assessment strategies (519) was higher than the 396 teachers who selected at least one formative assessment strategy, since each teacher could indicate using more than one strategy. The difference between the percentage of cases and the percentage of occurrences indicates the strategies most used by the teachers. Specifically, feedback, Q&A, self-assessment, quizzes, and metacognitive activities turned out to be the most used strategies. Chi-square analysis indicates that feedback and quizzes were most used in lyceum schools; self-assessment was most used in vocational education; assessment rubrics were most used in technical and vocational schools; and, finally, Q&A was distributed equally among school types.

Table 2. Distribution of formative assessment methods.

Formative Assessment Strategies	Occurrences		% of Cases
	n	Count (%)	
Feedback	92	17.73	23.53
Q&A	76	14.64	19.44
Self-assessment	74	14.26	18.93
Quizzes	66	12.72	16.88
Metacognitive activities	61	11.75	15.61

Table 2. *Cont.*

Formative Assessment Strategies	Occurrences		% of Cases
	n	Count (%)	
Observations	47	9.05	12.02
Assessment rubrics	44	8.48	11.25
Peer-assessment	33	6.36	8.44
Mid-term tests	12	2.31	3.07
Blue grade	8	1.54	2.05
Grades with detailed written comments	6	1.16	1.53
Total	519	100.00	132.75

4.1.2. Relationship Between Organizational Issues and Formative Assessment

Regarding the closed-ended question #5, we wanted to understand if the structure and the organization of Italian upper secondary schools foster or reduce the possibility of using formative assessment strategies during everyday classroom activities. Teachers could select one of the following choices regarding "the structure and organization of Italian upper secondary schools": (a) effectively support the application of formative assessment strategies; (b) do not support the application of formative assessment strategies much; (c) do not support the application of formative assessment strategies at all. Some teachers also added an option in the box "other", which can be summarized as follows: "it depends on individual teachers". Among the participants, 74 teachers (10.34%) did not select any option concerning the relationship between the organization and structure of Italian schools and the use of formative assessment strategies. In total, 24.31% of participants (174 teachers) selected the option "effectively support the use of formative assessment strategies"; 163 teachers (22.76%) indicated the option "not much"; and 228 teachers (31.84%) selected the option "at all". A total of 10.75% of teachers (77 teachers) added the option "it depends on individual teachers". The chi-square analysis does not show any significant differences considering the factors of "gender", "age", "teaching experience", "teacher's role", "subject", and "upper secondary school type", but there was a statistically significant difference for the factor "formative assessment experience" ($\chi^2 = 24.454$, df = 9, $p < 0.004$). Teachers who reported low levels of experience in using formative assessment strategies were also quite pessimistic regarding the use of formative assessment in upper secondary schools due to organizational limitations. We analyzed the value of the Pearson's chi-square test and the value of adjusted standardized residuals (ASRs) to pinpoint the specific differences amongst the groups of teachers, since the contingency tables were not 2×2.

4.1.3. Teachers' Preparation

Question #6 focused on teacher preparation to implement formative assessment strategies. Teachers could select one of the following choices: (a) I feel well prepared; (b) I feel prepared enough; (c) I do not feel very prepared; and (d) I do not feel prepared at all. Two hundred and fifty participants (34.92%) did not state any response. The other 466 teachers declared that (a) I feel well prepared (147 teachers—20.53%); (b) I feel prepared enough (95 teachers—13.27%); (c) I do not feel very prepared (70 teachers—9.77%); and (d) I do not feel prepared at all (154 teachers—21.51%). Of the teachers who declared facing some level of difficulty in implementing formative assessment strategies, almost one-third of them felt unprepared to prepare and conduct strategies based on formative assessment. As mentioned previously, there was a statistically significant difference for the factor of "formative assessment experience" ($\chi^2 = 27.613$, df = 9, $p < 0.001$). Specifically, teachers who

reported low levels of experience with formative assessment were those who did not feel prepared to implement formative assessment strategies.

4.1.4. Strengths and Weaknesses of Formative Assessment Strategies

Question #7 indicated the following list of potential strengths of formative assessment strategies: (a) monitoring learning processes and teachers' activities; (b) monitoring learner progress; (c) ensuring prompt feedback; (d) supporting cooperation and interaction; (e) increasing involvement/active participation/motivation; (f) supporting metacognition/self-regulation; and (g) supporting resilience/self-efficacy. Teachers also added the following two options: improving competencies and creating personalization situations.

The list of weaknesses was as follows: (a) difficulties in application (high number of students, too difficult techniques, etc.); (b) unclear/unsystematic/subjective/low level of validity; (c) lack of time and space; (d) lack of connections between summative and formative assessment; (e) increase in workload for teachers; (f) it is necessary to have experience; and (g) students want only formal grades/no commitments without a formal grade. Additionally, teachers suggested the following options: stressful and anxious; it creates confusion; and unclear feedback.

Table 3 shows the distribution of these options, which is similar to the distribution presented in the previous paragraph "Formative assessment strategies". Notably, 450 teachers (62.85%) selected types of strengths, whilst 391 teachers (54.61%) chose types of weaknesses. The total amount was more than 100%, because more teachers picked more than one type of strength and/or weakness. In terms of strengths, the teachers indicated that formative assessment strategies support metacognition and self-regulation; allow teachers to monitor the whole teaching and learning processes; reinforce the resilience capacities of students and their self-efficacy; and allow teachers to monitor learner progress. From the weaknesses point of view, the teachers' options indicate their difficulties in implementing formative assessment strategies because of a lack of time and space, unclear connection between summative and formative assessment, and difficulties in application due to high numbers of students or too complicated formative assessment techniques. Some statistically significant differences are specified in the last column of Table 3 considering "upper secondary school type" as a variable. For instance, lyceum teachers selected the strength of "ensuring prompt feedback" for a higher number of occurrences compared to the other teachers. The chi-square analysis showed a statistically significant difference.

Table 3. Distribution of strengths and weaknesses of formative assessment methods.

Strengths	Occurrences		% of Cases	Statistically Significant Differences
	n	Count (%)		
Supporting metacognition/self-reflection/self-regulation	163	21.06	36.22	No differences
Monitoring learning processes and teachers' activities	123	15.89	27.33	Vocational
Supporting resilience/self-efficacy	116	14.99	25.78	Technical
Monitoring learner progress	111	14.34	24.67	Technical
Ensuring prompt feedback	68	8.79	15.11	Lyceum
Supporting cooperation and interaction	54	6.98	12.01	Technical
Increasing involvement/active participation/motivation	49	6.33	10.89	Technical
Improving competencies	46	5.94	10.22	Vocational
Creating personalization situations	39	5.04	8.67	Technical
Total	769	100.00	171.47	
Weaknesses				
Lack of time and space	156	24.49	39.89	Vocational
Lack of connections between summative and formative assessment	144	22.61	36.83	Technical

Table 3. *Cont.*

Weaknesses				
Difficulties of application (high number of students, too difficult techniques, etc.)	112	17.58	28.64	Lyceum
Unclear/unsystematic/subjective/low level of validity	67	10.52	17.14	Technical
Students want only formal grades/no commitments without a formal grade	61	9.57	15.61	Vocational
It is necessary to have experience	32	5.02	8.18	Technical
Increase in workload for teachers	28	4.39	7.16	Lyceum
Stressful and anxious	17	2.69	4.35	Technical
It creates confusion	13	2.04	3.32	Vocational
Unclear feedback	7	1.09	1.79	Vocational
Total	637	100.00	162.94	

4.2. Qualitative Findings

Figure 1 shows the results of the qualitative analysis. The three areas indicated in the figure are connected to the three open-ended questions. On the left side of Figure 1, we present the codes and subcodes linked with the ideas and concepts of Italian teachers shared regarding formative assessment (question #1). On the right side, we show the codes related to question #3. These focused on teachers' opinions about the potential relationship between formative assessment strategies and the development of students' learning processes. The codes presented at the bottom indicate teachers' ideas about the possible link between summative and formative assessment (question #4). No statistically significant differences were observed when we analyzed the data comparing the participants' characteristics.

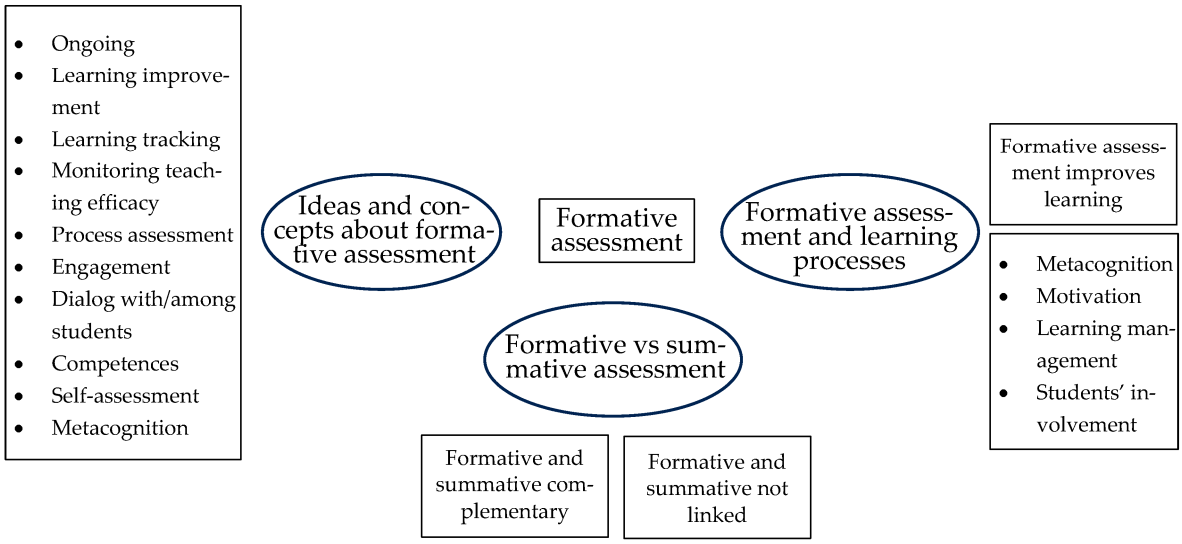

Figure 1. Qualitative data analysis.

4.2.1. Ideas and Concepts of Italian Teachers About Formative Assessment

Table S1, included in the Supplementary Materials, reports in detail the rich and multifaceted ideas of teachers about formative assessment. The most relevant element is named "learning improvement" (with a total of 203 occurrences). This code contains the following five subcodes: "overall learning improvement", "feedback", "guidance", "recognizing progress", and "strengths/weaknesses". The participants specified that formative assessment can monitor learning (code named "learning tracking") and teaching processes (code named "monitoring teaching efficacy"). Furthermore, formative assessment is a kind of assessment that occurs during the whole teaching and learning processes (code named

"ongoing"). The teachers considered formative assessment as a method to involve students ("engagement"), discuss and debate with and among them ("dialogue with/among students"), support competence development ("competences"), inspire metacognition ("self-assessment, metacognition"), and develop soft skills ("soft skills"). The participants saw formative assessment as a strategy to carry out either a "holistic assessment", a "performance assessment", or, again, a "process assessment". Ultimately, some teachers considered a formative assessment separate from summative one ("beyond summative assessment"), and few teachers considered formative assessment as just another way to give a grade ("summative assessment grades").

4.2.2. Formative Assessment and Students' Learning Processes

In general, the teachers declared that students' learning processes are positively affected by formative assessment. As shown in Table S2, included in the Supplementary Materials, the code named "Effective" (211 occurrences) indicates that learning can be improved by formative assessment strategies, in particular through the development of several factors, such as "Formative assessment promotes metacognition" (78 occurrences),"Formative assessment promotes learning management" (29), "Formative assessment promotes motivation" (22), "Formative assessment promotes involvement" (21), and "Formative assessment promotes personalization" (15). A further important code is represented by the social-emotional aspects supported by formative assessment. The code "Reducing anxiety" (17 occurrences) indicates that formative assessment can help students to make a stronger case for reducing anxiety. This aspect is also indicated by the codes called "Feedback" (13 occurrences) and "Formative assessment promotes resilience" (12 occurrences), which give students the opportunity to address difficulties and find new learning strategies. Few teachers stated that formative assessment is ineffective (13 occurrences) and does not affect students' learning processes. Furthermore, some teachers declared that the efficacy of formative assessment depends on "Students' attitudes" (10 occurrences), that is, on their willingness to learn and on "Teachers' strategies", because formative assessment does not directly support learning.

4.2.3. Relationship Between Formative and Summative Assessment

Table S3, included in the Supplementary Materials, shows the codes focused on the teachers' ideas about the potential relationship between formative and summative assessment. This category includes four main codes, named as follows: "Formative assessment", "Formative and summative assessment are complementary", "Formative and summative assessment are not linked", and "Summative Assessment".

"Formative Assessment" is a main code composed of two codes. The first, "Formative assessment limitations", highlights the difficulties linked with the application of formative assessment strategies in everyday school activities, as follows: "Demanding", "Management issues", "Not clear", and "Teachers' troubles". The second, "Formative assessment purposes", includes the strengths and specific properties of formative assessment. In this code, the most relevant aspect is "Modifying summative assessment" (50 occurrences). A teacher stated that "Formative assessment might be a kind of extension and reinforcement for the final grade". Further meaningful aspects are represented by the following subcodes: "Learning monitoring", "Metacognitive function", "Personalization", and "Skills-centered". A few participants referred to aspects of formative assessment such as "Holistic vision of learning", "Improving resilience", "Improving teaching", "Preparing students for the test", and "Formative supports summative".

The code named "Formative and Summative Assessment are complementary" is mainly represented by the subcode called "In a generic way" (120 occurrences). The

teachers had an idea that there is a link between formative and summative assessment, but they could not define it precisely. In fact, a teacher declared that "I find a connection between formative and summative assessment. They never diverge much from each other". Some teachers tried to specify this connection better, emphasizing the subcode "Reciprocal meaning". According to these teachers, formative and summative assessment, together, can give a more complete view of students' learning achievements. Further interesting subcodes are represented by "Ongoing feedback", "Formative integrated with summative assessment", and "Hermeneutic function of formative for summative assessment". In particular, this last subcode indicates that formative assessment can help teachers to deeply understand the results of summative assessment procedures.

The code called "Formative and Summative Assessment are not linked" suggests that 72 participants did not see any connections between formative and summative assessment. Especially, the subcode "Different goals" specifies the differences between the two types of assessment. A teacher declared that "Summative assessment can measure the contents acquired. Instead, formative assessment supports the students' involvement and attention". Further subcodes underline the distance between formative and summative assessment, as follows: "Difficult to find a connection", "Formative assessment ongoing, summative assessment at the end", "Just a grade", and "Summative assessment follows formative one".

The last main code, named "Summative Assessment", includes the following two codes: "Summative assessment limitations" and "Summative assessment purposes". The first one is focused on critiques of summative assessment, such as "Does not improve learning", "Does not improve resilience", and "Grading anxiety". Lastly, the summative assessment purposes code specifies the characteristics of summative assessment, which is focused on "content-centered" and "required by students".

5. Discussion

Quantitative and qualitative findings can give us an important overview of the use of formative assessment in Italian upper secondary schools. First of all, around 45% of teachers do not use formative assessment strategies or believe they use formative assessment strategies, but actually use summative assessment strategies. Additionally, teachers who do not use formative assessment strategies are equally distributed across the three upper secondary school types.

It is particularly interesting to examine the distribution of formative assessment strategies. Around one-quarter of teachers use several forms of feedback to comment on and receive comments about a task completed by students. From this, we can confirm the results of an OECD (2005) study, which underscores the importance of feedback on student performance, and Boud (2010), who proposed that giving and receiving feedback is critical. Similarly, one teacher out of five uses different forms of Q&A before or after a mid-term test. Also, the self-assessment strategy is employed by around 20% of teachers and 15% of them use several forms of interactive quizzes to check and monitor learning processes. These first observations underline the importance of interactive feedback during formative assessment strategies, as indicated by Wiliam (2006) and Sambell et al. (2012). The second fundamental perspective of formative assessment is represented by metacognitive aspects. Around 15% of teachers report that formative assessment develops students' metacognitive skills, as emphasized by Nicol and Milligan (2006) and the European Commission (2022).

A crucial point for the development of formative assessment strategies in Italian upper secondary schools is represented by the organization and structure of this school level. More than 50% of teachers state that the organization of Italian schools does not foster the use of formative assessment because of the high number of students in classrooms and time constraints. Additionally, teachers with less experience with formative assessment

tend not to implement formative assessment activities due to the organizational limitations. So, basically, a kind of vicious circle risks being established in upper secondary schools, as clarified by Asare and Afriyie (2023). These observations are confirmed by the statements of teachers who report difficulties in implementing formative assessment activities. These teachers represent around one-third of the sample, and they feel unprepared to prepare and conduct techniques based on formative assessment. Additionally, the teachers identify some weaknesses of formative assessment. In particular, 40% of teachers report that they do not use formative assessment strategies because of lack of time and space, but also because formative assessment strategies are difficult to apply and there are no clear connections between summative and formative assessment (Dolin et al., 2018).

On the other hand, around six teachers out of ten indicate some forms of strengths of formative assessment. As indicated previously, teachers recognize the crucial role of formative assessment in developing metacognition and self-regulation among students. Consequently, these aspects allow both teachers and students to monitor the whole teaching and learning processes, as suggested by Chappuis and Stiggins (2002). Additionally, formative assessment can improve the resilience skills of students and their self-efficacy levels, making them able to face difficulties and find new learning strategies (Meusen-Beekman et al., 2016; Sahoo et al., 2023).

The qualitative data in this study reveal the rich and multifaceted ideas of teachers about formative assessment. More than 25% of teachers consider formative assessment strategies to be useful for improving learning processes, mainly because both students and teachers can check and continuously monitor progress (Rodrigues & Oliveira, 2014). The other main question is constituted by the possibility of engaging students deeply (Wafubwa, 2020).

One of the main questions related to the use of formative assessment is whether it can improve learning. In general, the majority of teachers state that formative assessment positively affects the learning process, in particular from a metacognitive point of view, because it allows students to reflect on and manage their own learning strategies (Carney et al., 2022). Conversely, only a low percentage of teachers consider formative assessment to be unsuitable for developing students' learning processes. These teachers, although few, do not consider formative assessment strategies as useful and cannot see how students' learning processes can be improved through formative assessment practices.

A further crucial question is about the relationship between formative and summative assessment. Around half of the teacher sample consider formative and summative assessment as complementary, but they struggle to find explicit ways to make this relationship real in everyday school activities (Gezer et al., 2021). Moreover, around 10% of teachers think that summative and formative assessments are completely separate. The primary challenge continues to be the question of how to connect formative and summative assessment in a formal school report. Also, the teachers who see a relationship between formative and summative assessment do not know how to express this link. Some teachers suggest increasing the final grade for students who actively participate in formative activities. Other teachers recommend adding qualitative comments in the final report to highlight students' progress. This issue remains unsettled.

The main limitation of this study is represented by the selection of participants. The sample is composed of teachers who voluntarily took part in the study. For this reason, they could be particularly interested in applying and exploring formative assessment issues compared to other Italian upper secondary teachers. This bias can give an incomplete view of formative assessment. Additionally, the questionnaire used in this study has not been validated in previous studies.

6. Conclusions and Implication for Policy and Practice

To conclude this article, it is important to, on the one hand, address the research questions and, on the other, highlight potential policy implications for teacher education.

Focusing on the first research questions (RQ1 and RQ2), we can state that Italian teachers are split into the following two main groups: doubtful teachers and trustful teachers. The first group is composed of teachers who do not apply formative assessment in the classroom and do not think that formative assessment can be useful for the improvement of students' learning processes. In the second group, teachers try to apply several formative assessment strategies based on feedback, Q&A, metacognition, etc. Additionally, (RQ3) these teachers associate many educational strengths with formative assessment, as follows: self-regulation, self-efficacy, resilience, etc. On the other hand, doubtful teachers complain about the lack of time and space to implement formative assessment activities, and also consider formative assessment as an unclear and complicated strategy with a low level of validity. Consequently, regarding RQ3, we can affirm that trustful teachers consider formative assessment as a stimulating way to engage students and improve their learning processes, whilst the other group is quite doubtful, mainly due to planning and organizational issues.

This last observation is strictly connected with RQ4 about the possibility of integrating formative and summative assessment. Doubtful teachers struggle to find a link between summative and formative assessment, so they focus mainly on summative aspects and, in particular, on how to give a formal grade. Additionally, limitations due to contextual factors (time, space, number of students per class, etc.) tend to confirm these doubts. In the Italian context, it is also necessary to highlight that many students and families are focused solely on grades and summative assessment. Fortunately, trustful teachers try to connect formative and summative assessment, because these two aspects together can give a wider perspective of students' learning outcomes and processes. The answer to the last research question (RQ5) indicates that doubtful teachers feel unprepared to organize formative assessment activities. From these observations, it is evident that teachers need practical experiences with and support for understanding the relationship between formative and summative assessment and how to integrate both within their unique school contexts.

Our overall research question was focused on the potential of formative assessment strategies to support teaching and learning processes. Basically, we found two main profiles of teachers. We can state that a significant group of teachers are embracing formative assessment strategies and are integrating them into their classroom activities, even if they are aware of some limitations. On the other hand, doubtful teachers represent a still large group of teachers who do not feel prepared, do not consider formative assessment as a chance to improve learning, and, sometimes, consider formative assessment as a waste of time. Teachers who apply formative assessment strategies tend to see the positive results in terms of improved student capacity to self-regulate learning. Teachers who do not apply formative assessment strategies tend to be focused only on summative aspects.

On the basis of these considerations, we can conclude with some implications for teacher education policy. First of all, regarding pre-service teachers, it is necessary to implement courses, workshops, and teaching practice where pre-service teachers can have the opportunity to learn and practice several forms of formative and summative assessments, underlining the relationships between them. Such experiences will give prospective teachers a broader idea of assessment that can be implemented when they become in-service teachers. Regarding in-service teacher education, it is important to design classroom-based activities to be carried out in schools so that in-service teachers might experiment with and discover the strengths and educational opportunities that formative assessment strategies can provide.

This study prompts opportunities for future research on formative assessment, including a longitudinal study on the long-term effects of formative assessment strategies on students' academic achievement, motivation, and self-regulation. Furthermore, the replication of this study in other educational contexts could offer comparative insights into formative assessment in different school systems. Finally, since the relationship between summative and formative assessment in everyday practice remains an ongoing question, additional studies focused on integrating the positive effects of both summative and formative strategies on students' learning processes are warranted.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/educsci15040438/s1, Table S1: Ideas and concepts of Italian teachers about formative assessment; Table S2: Relationship between formative assessment and students' learning processes; Table S3: Relationship between formative and summative assessment.

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