WAINHOUSE
Research

The Role of Education in Building Soft Skills

Putting into Perspective the Priorities and Opportunities for Teaching Collaboration and Other Soft Skills in Education

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Executive Summary

Education Today

The field of Education is under pressure as never before to prepare learners in new ways for productive participation in the workforce. Much attention has been paid by the media on the frequent introduction of new standards and curricula, and controversies surrounding the focus on mandated testing, but a less publicized, yet no less important shift among the business community has begun. The dual forces of globalization and technological change together are transforming the needs of employers, who in recent years have begun to make new calls for those entering the workforce to demonstrate soft skills – competencies that will make graduates more agile, better team members, and more adaptable.

SMART Technologies asked Wainhouse Research to investigate the state of education and, in particular, attitudes among educators, parents, and students towards the "Three R's" (reading, writing and arithmetic) and the "Four C's" (collaboration, communication, creativity, and critical thinking). The "knowledge vs. skills" debate is a part of the discussion, as are concerns regarding how educators can best go about empowering, motivating, and engaging learners. Among the key questions of the day are the following:

- How well are educational institutions addressing learner, workforce, and societal needs?
- What do stakeholders believe are the elements of effective teaching and learning?
- Where do stakeholders believe schools should be placing more emphasis? On skills or on knowledge acquisition? On soft skills or hard skills?

Synopsis

⇨ Research findings indicate that stakeholders believe schools should be doing better in preparing learners for the workforce.

⇨ Many respondents believe that too much emphasis is placed on teaching to mandated tests and too little is placed on having learners collaborate with others.

⇨ The research shows that problem-solving and collaborative skills are the two top soft skills on which schools should be focusing. In fact educators, parents, and students find that the benefits of a focus on collaboration are many, from encouraging active participation among learners to encouraging learners to take ownership of their education.

⇨ Yet stakeholders believe schools are not focusing sufficiently on fostering collaborative skills. To do a better job of fostering

collaborative skills, many believe schools should improve Professional Development (PD), offer new methods of assessment, provide greater leadership, and adopt new approaches to teaching.

⇨ Employers are calling for collaborative skills, but find that graduates are not bringing those skills into the workplace – even as these skills are perceived as essential, both for a successful society and for the learners' own personal development.

Methodology

In April-May 2014 Wainhouse Research interviewed 22 educational practitioners and thought leaders located in North America and Europe, as identified in Appendix I. We used those interviews as a basis for drawing a "qualitative" report card of education today, and to contribute to the design of a survey instrument that was fielded in May-June 2014 to 1,030 teachers, administrators, parents, and students in the UK (537) and North America (493). This paper blends the findings of both interviews and survey into one big picture of stakeholder attitudes towards education today and its role in fostering soft skills like collaboration and cooperation.

Key Findings

Agreement exists broadly that the role of education is to teach learners how to learn, foster enjoyment of learning, and prepare learners to enter the workforce. Beliefs about how well schools are doing and how best to accomplish those tasks vary. To summarize key findings:

Research findings indicate that stakeholders believe schools should be doing better in preparing learners for the workforce – significantly better.

Almost two out of five (39%) stakeholders believe that their schools should be doing better in preparing learners for the workforce. Many believe that schools are doing a decent job focusing on the 3 R's: reading, writing, and mathematics, but are *not* doing as good a job focusing on other aspects of education essential to preparing learners for entering the workforce.

Many thought leaders and respondents believe that too much emphasis is placed on teaching to mandated tests and too little on having learners collaborate with others.

For almost three out of five (58%) of those surveyed, and many we interviewed, this is a result of too much emphasis placed on teaching to mandated tests, while some also believe schools are too focused on individual achievement or having students working alone too much. *Far* too little emphasis is placed on having learners collaborate with other learners outside of the classroom (60% believe this), group achievement (46%), and working in teams (40%).

Research shows that problem-solving and collaborative skills are the two top soft skills on which schools should be focusing.

That ability to collaborate is perceived as an essential component of education – 95% of those surveyed say that the ability to collaborate is important, just behind those who believe problem solving is essential (96%). These two skills lead the pack of soft skills and are perceived as extremely important to preparing learners for work life.

Educators, parents, and students believe that the benefits of a focus on collaboration are many, from encouraging active participation among learners to encouraging learners to take ownership of their education.

Nine out of ten survey respondents (92%) believe that collaboration promotes active participation among learners, and a similar number believe that teaching collaborative skills encourages learners to take ownership of their education (88%).

Yet many believe that schools are not focusing sufficiently on fostering collaborative skills.

Stakeholders are loud and clear: *where 72% believe that schools should have a high focus on collaboration, only 32% believe schools do focus sufficiently on collaboration.* That means that 40% (72% less 32%) believe that schools are not doing enough to focus on teaching collaborative skills. A total of 91% believe that educators need to *formally learn how to foster collaboration skills* among their students, and 87% believe that learning how to collaborate should formally be included in education curricula.

The research suggests that to better foster collaborative skills, educators should offer an experiential, constructivist education: improved PD, new methods of assessment, greater leadership, and changing approaches to teaching.

Offering learners an experiential approach to learning how to collaborate is the most preferred approach to teaching collaborative skills (62%), followed by modeling the behavior (20%) and teaching the behavior (10%). This means that educators need to begin to create new approaches to provide experiences that promote collaborative skills, and new criteria for measuring those skills. Getting beyond "teaching to the test" and other traditional approaches to teaching are important elements of fostering change, which many say will only come about through funding PD, new methods of assessment, greater leadership, and changing pedagogical and physical approaches to teaching.

Many believe that employers are calling for collaborative skills, but find that graduates are not bringing those skills into the workplace. These skills are perceived as essential, both for societal success and for learners' own personal development.

Collaborative skills are perceived as essential to workforce development at a both macro (societal) and micro (learner level). A total of 94% agree that collaborative skills are critical to the making of a mature society, and 92% see it as critical for economic growth. At the learner level, similar numbers (90%) believe that collaborative skills are critical for successful learning and almost as many believe that they

are critical for a person to be successful (89%).   Some say that failure to adapt to 21st century global economies and changing workplace needs could have dire consequences, but most agree that the benefits to society and to the individual learner are essential. Collaboration is one soft skill that is here to stay – employers are asking for it, so the next big step will come over time via fomenting change.

Where and How Schools Should Be Placing Emphasis

Preparing Learners for the Workplace

About two out of five (39%) of all survey respondents believe schools are doing a relatively poor job (i.e., could be doing better) in preparing learners for the workplace. A total of 94% believe schools should have at least some focus on preparing learners for the workplace, while 53% say schools actually do have some focus on preparing learners for workplace. Another way to view this: 41% say their schools should be doing better in focusing on preparing learners for the workplace.   Some of this is because of the focus on content and knowledge that appears to come at the expense of focusing on skills. And there are implications for learners and the workplace at large.
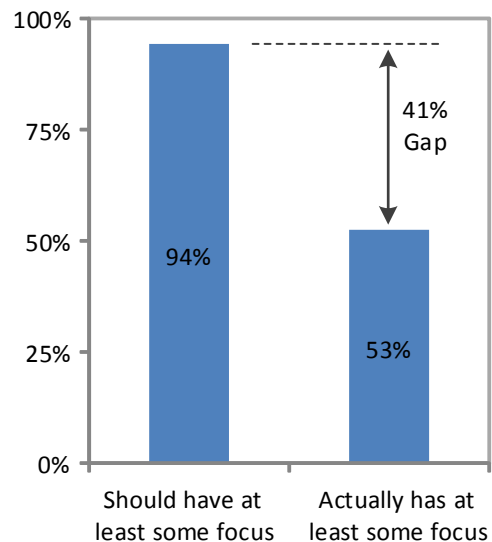
Figure 1 School Focus on
Preparing Learners for the Workplace

> We are torn between getting the standards on assessed pieces of work, which is a content-driven process, and preparing people for a world of work that is *not* content driven. It's a more skills-driven world.
>
> – Hannah Jones, Founder & Director, Connected Learning, United Kingdom

Placing the Focus on Specific Skills and Outcomes

Schools are doing a decent job focusing on the 3 R's: reading, writing, and mathematics, but are *not* doing as good a job focusing on other aspects of education, such as soft skills like collaboration and creativity. While the 3R's are top-rated in importance, many of the remaining skills or areas of focus are close behind in importance. Having said that, survey respondents believe that a significant gap exists between how schools focus on the 3R's and other aspects of education, specifically collaboration, creativity, and making learning fun.   The specific areas of focus include the following:

- Critical thinking
- Reading, Writing, Mathematics
- Collaboration
- Creativity
- Communication
- Preparing students for the workplace
- Making learning fun
- Teaching and fostering lifelong learning skills

In an ideal universe, the areas on which respondents feel schools should and do focus should meet on the diagonal line in **Figure 2**. Unfortunately, while the 3 R's tracks closest to this ideal, all of the other areas suffer from a focus gap and receive insufficient attention. Thus respondents believe schools are focusing far too little on areas like creativity, collaboration, and preparing students for the workplace.
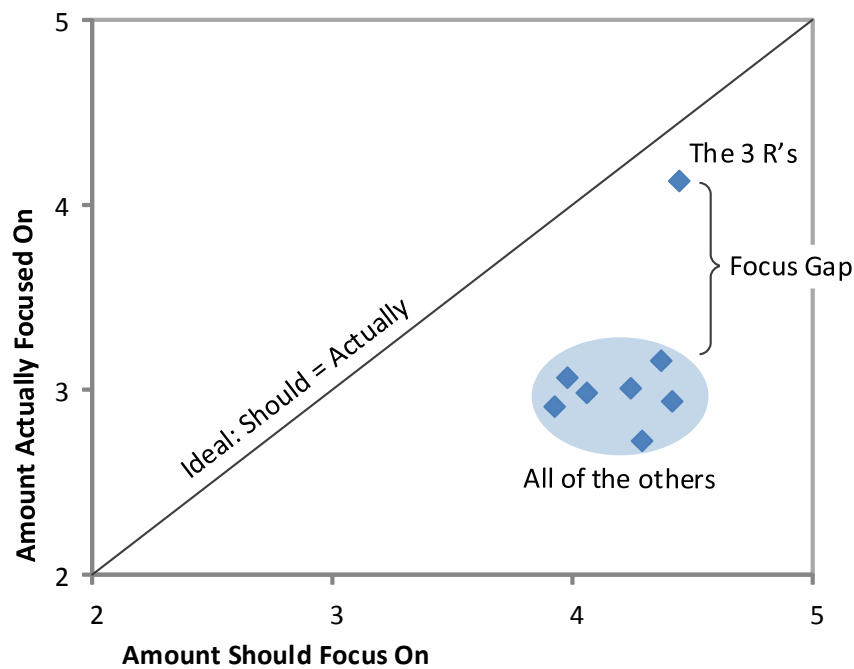
Figure 2 Gap between What Should be and What is Focused on

Skills versus Knowledge

Should education focus on building skills (creativity, communication, collaboration, and critical thinking) or on ensuring acquisition of knowledge (i.e., information, facts, and data)? This age-old debating point remains divisive among some. As shown in **Figure 3**, not quite half (46%) of those surveyed believe that education should be an equal mix of skills and knowledge acquisition. Of the remaining group, far more (42%) believe building skills are more important than those who believe building knowledge is more important (12%).   Many of the thought leaders we interviewed emphasize that educators promise to pay attention to developing skills, but do this insufficiently because the easiest thing to measure is knowledge, not skills.

KNOWLEDGE

SKILLS

- Somewhat Favor
- Moderately Favor
- Strongly Favor KNOWLEDGE

- Equally Building BOTH

- Strongly Favor SKILLS
- Moderately Favor
- Somewhat Favor

4%   4%   4%

16%

14%

12%

46%

BOTH

Figure 3 Focus on Ideal Mix of Skills versus Knowledge

> We need to equip students with skills, knowledge, and empathy that will make them constructive leaders in a volatile future. We thought educators could guess what would be important in 20 years. This was the industrial age model – to assume that we know what kids need to know. Now I expect to see education give kids 21st century skills, global competencies, and inter-cultural competencies that make them good at collaborating with other stakeholders who have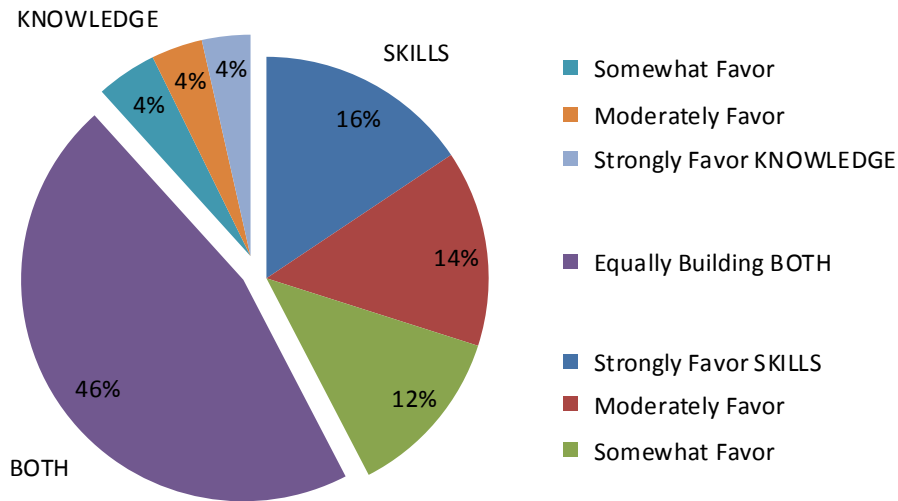 different needs. It is controversial in educational circles to not stress content. Teachers always talk about values and behaviors and skills, yet they usually teach to the knowledge component.
>
> – Jennifer D. Klein,
> Global Educational Consultant & CEO,
> PRINCIPLED Learning Strategies, Inc.

Where Schools Focus Too Much or Too Little

Stakeholders believe that schools focus too much on "teaching to the test," solitary (alone) work, and individual achievement, whereas teamwork, group achievement, and collaboration with others outside of the classroom all receive too little focus. The concern about teaching to mandated tests as a means of measuring knowledge knows no geographical boundaries, as those we interviewed across Europe and in North America echo the same concern. As shown in **Figure 4** , almost three out of five – a total of 58% of those surveyed – believe that too much emphasis is placed on teaching to pass mandated standardized tests.   (We do note some geographical differences among the survey population: in the UK 50% of stakeholders believe too much emphasis is placed on mandated tests, while 67% of North American stakeholders believe this is the case.)

It is also clear that many (32%) feel schools are focusing too much on individual achievement and have students working alone too much (28% believe this).   But many also feel that schools are focusing too

little on the approaches to teaching and learning that are reciprocal to where too much emphasis is placed: 60% say too little collaboration takes place with other learners outside the classroom, 46% say too little focus is placed on group achievement, and 40% say too little emphasis is placed on working in teams.
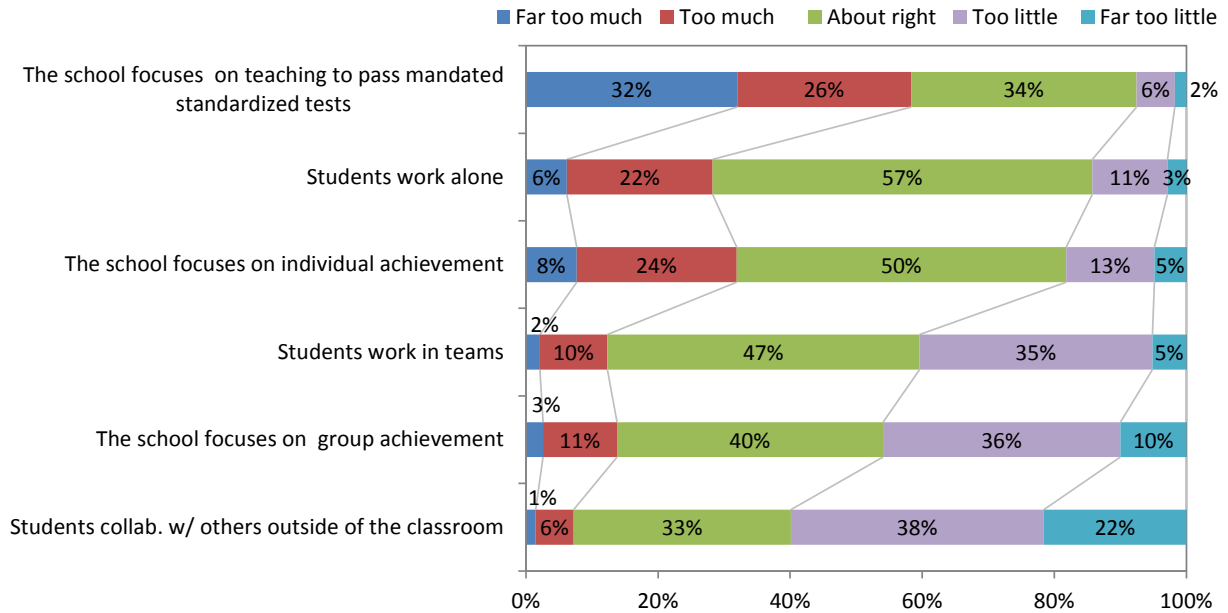
	Far too much	Too much	About right	Too little	Far too little
The school focuses on teaching to pass mandated standardized tests	32%	26%	34%	6%	2%
Students work alone	6%	22%	57%	11%	3%
The school focuses on individual achievement	8%	24%	50%	13%	5%
Students work in teams	2%	10%	47%	35%	5%
The school focuses on group achievement	3%	11%	40%	36%	10%
Students collab. w/ others outside of the classroom	1%	6%	33%	38%	22%

Figure 4 School Focus Areas -- Too Much or Too Little?

Because educational practices exist in a continuum, many schools may be at different points along that continuum in adopting new methods of teaching and learning. The thought leaders interviewed for this report are already thinking in new ways about changing methods of assessments, teaching new skills, and fostering new methods of learning.

> The way we measure and assess achievement has to change because we are changing how we teach, but we are assessing the same way as 20 years ago.
>
> – Gonzalo Garcia, ICT Coordinator and Teacher, SEK-Atlantico International School, Spain

> The only time you work alone is in education, and when you leave education you work with other people. (Certain) skills are overlooked, especially in British education. Politicians are saying we need to create children with resilience and problem solving skills. But it's a whole theory and a process that must be taught.
>
> – Gareth Hancox,Digital Learning Leader and Teacher, Pheasey Park Farm Primary School, United Kingdom

> Education should be less about teaching content and more about coaching learning partnerships.
>
> – Lord Jim Knight, Director, STEP-A International and Former Schools Minister, United Kingdom

Importance of Skills and Traits

Survey respondents believe that a number of skills are extremely important as areas of focus for schools. The rank order is as follows:

1. Problem solving
2. Ability to collaborate
3. Persistence
4. Creativity
5. Academic knowledge
6. Leadership skills

No one would debate the importance of *any* of these skills and traits, but **Figure 5** shows the extent to which the degree of emphasis varies. In fact, the ability to collaborate is important to 95% of those surveyed, just behind problem solving (96%). These two skills lead the pack and are very important to preparing learners for work life, though we note that persistence also is important to 90% of respondents.
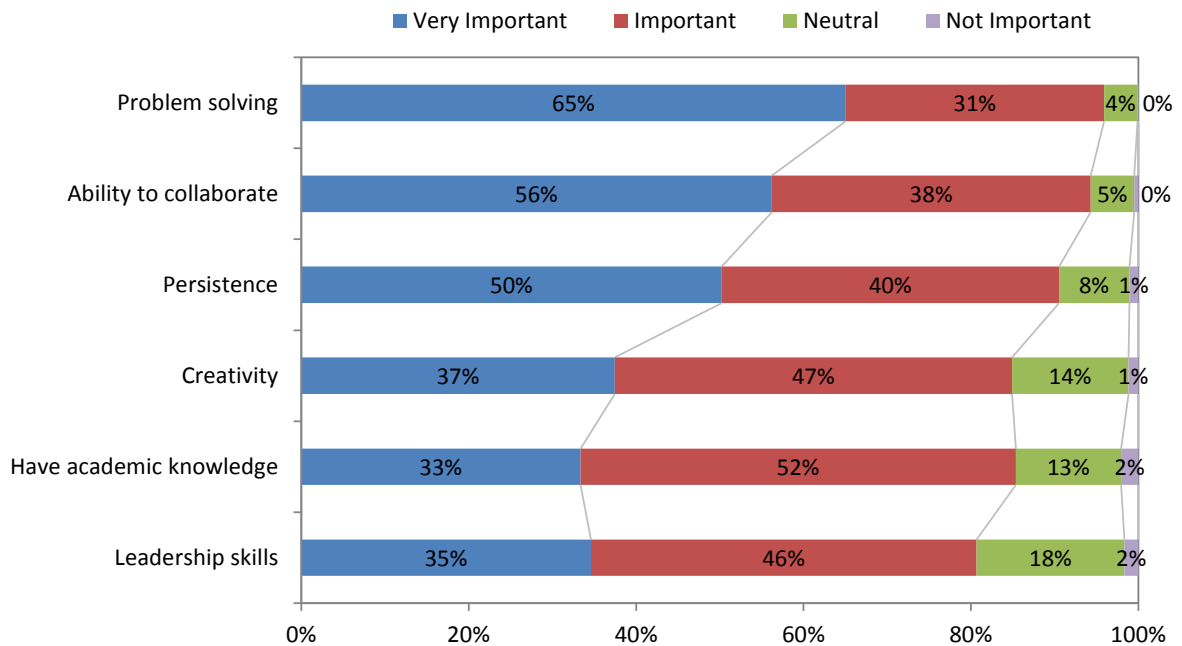
Figure 5 Importance to Educational Stakeholders of Teaching Certain Skills and Traits

But we know something is missing from what is being achieved. As an example, almost two out of five (38%) believe something is wrong with how schools focus on teaching collaborative skills. Narrowing down the focus to the areas with some of the greatest differentiation between where we should focus and how much schools do focus, we note that 72% say schools should provide a high or very high focus on collaboration, but only 32% say schools are actually providing sufficient focus on collaboration.

Collaboration Defined

Companies are asking for graduates who can work in teams and collaborate well. Yet as a skill, *collaboration* is sometimes confused with *cooperation,* and many of those we interviewed get much nuanced in differentiating the two. Those surveyed understand that they are *not* the same – a strong four out of five (81%) understand this fact. But confusion arises surrounding the impact of collaborative skills vs. cooperative skills.

Traditionally, educators have placed more emphasis on cooperation, but a distinction is starting to be realized between the two. Collaboration is coming to be perceived as "more than" cooperation. It requires a more complex range of interactions, with individual skills linked to learner skill sets. It also calls for a "messier," less easy-to-measure process that pushes learners and educators out of their normal comfort zones and allows for further skills development based on the collaboration.

In an unaided, "tell us your top of mind definition of collaboration" question, almost nine out of ten (89%) of the 967 respondents who offered a response indicate that collaboration requires "working together on a common goal." More than one in three (35%) indicate that it calls for "achieving a result." And another 30% believe that it calls for "teaming and incorporating individual strengths and skills." As a point of differentiation, 64% of the 974 who answered this question believe that cooperation consists of working in harmony and 30% believe that cooperation consists simply of "blending in," or "getting along." There is less agreement concerning cooperation than there is regarding collaboration.

Twice as many stakeholders believe that collaboration leads to a result than those who believe that cooperation leads to a result.
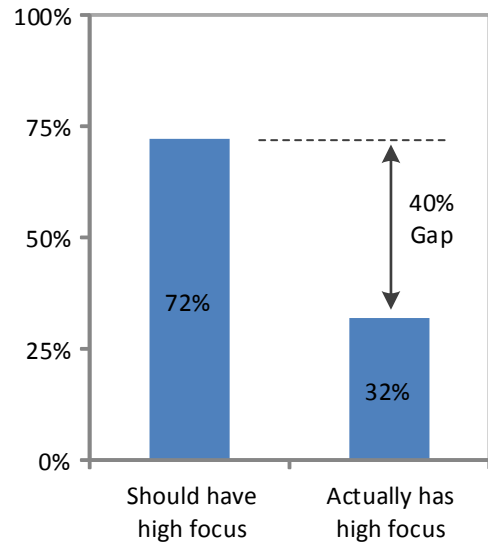

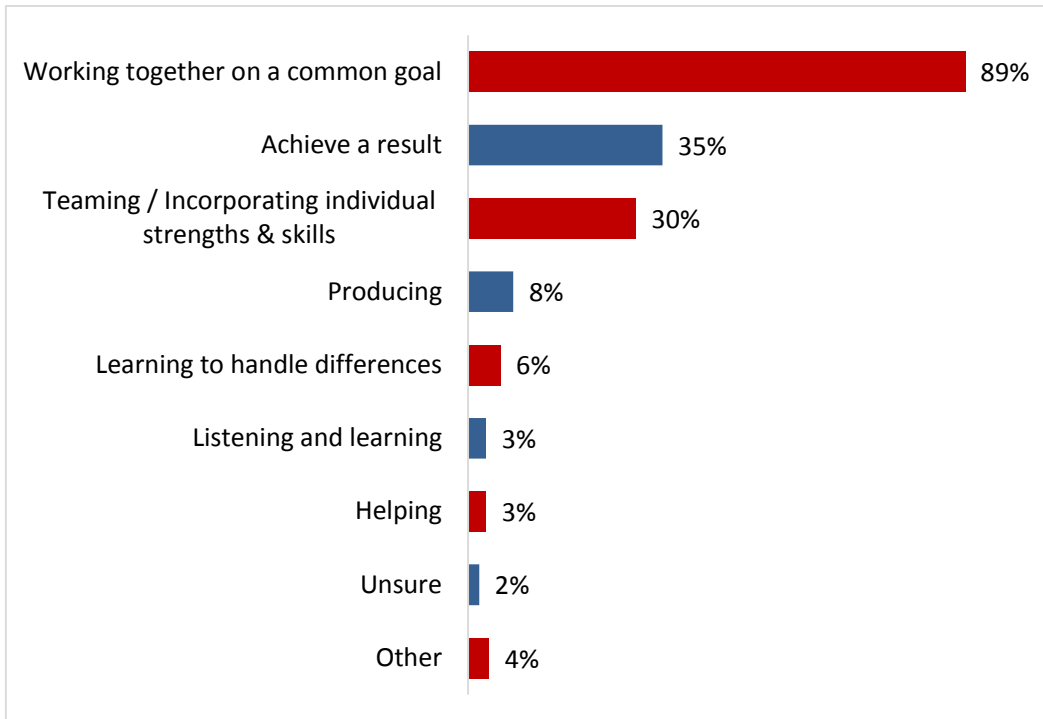**Figure 6 School Focus on Teaching Collaborative Skills**

Figure 7 Description of Collaboration

Yet results are not the only distinction between the two methods of engagement. In many ways collaboration – in the minds of those interviewed for this paper – overlaps with, but is distinct from, cooperation.   Table 1 illustrates those distinctions: collaboration is nothing less than disorderly and rambunctious in the minds of teachers, thought leaders, and administrators alike. Some speak to the need for greater interactivity and engagement, including the ability to disagree and debate. And many believe that the very act of fostering collaborative skills among teams of learners involves encouraging those learners to bring their skill sets, be open to learning new skill sets, and most of all, *work it out themselves.* This is especially true for those teaching in secondary education.

Collaboration	Cooperation
Messy, but allows for development of collaborative skills	Is more light-weight and clear-cut
Includes politeness, but also ability to disagree, debate, come to consensus	Politeness
Individual tasks are linked to skill sets that contribute to collaboration	Is built more for independent work that may still involve some collaboration at process end
Calls for greater interactivity and learning and support for one another	While interaction is involved, less structure drives the interactions

Collaboration	Cooperation
Calls for more leadership and organization	Does not call for teaming
Focuses on shared goals	Minimizes shared goals but may foster common interests
Promotes socialization	Promotes socialization – but it is "collaboration light"
Collaborative learning is problem-based and process-oriented	Cooperative learning involves learning skills
Deep change involved	Less deep change involved

Table 1 Collaboration and Cooperation Comparison

Collaboration combines physical output and mental processes. I see collaboration as an effective method of working towards one goal, sharing responsibility, and also students learning from one another. But there are different types of collaboration. Students working in groups or pairs or sharing responsibility, moving on to a higher step of collaboration with interdependent roles.

– Simon Johnson,
ICT Teacher and Microsoft
PIL Lead Teacher,
Highfields High School,
United Kingdom

Cooperating is superficial – an agreement that someone has issued and everyone is on the same page, where the outcome is usually defined and expected. Collaborating is much deeper, and is really "doing something" with people with different skills, where the outcome is likely different and one can expect change.

– Ruth Litman Block,
Innovative Practices
Consulting, MNR EDtech
Consulting, LLC, St. Louis,
MO, U.S.A.

In the business world you get a series of experts, let's say working on a house, and the final product is the important thing. But they have their own areas of expertise. In the classroom, I am not sure the approach to the house is the important thing. I don't think lab reports (in my science class) are most important. I want my kids to collaborate on lab reports ... but in schools we adopted the business model: let the expert divide and conquer. It works ok in the business world as I'm an expert and don't have time to teach you my job. But my kids need to do all things. All need to work together on an introduction. Or argue about commas and graphs and work together to debate issues, and look at scientific observations. That's true collaboration.

– Ian Fogarty,
High School Chemistry and Physics
Teacher,
Riverview High School,
New Brunswick, Canada

The Impact of Collaborative Skills

Benefits for Learners

To thought leaders, collaborative skills are very different from cooperative skills and far more likely to improve an end result. In the minds of the educational community, the difference between collaboration and cooperation when it comes to "improving an end result" is minimal. Both appear important, and while collaboration is slightly higher in most cases, it is not enough to mean much.   But this points to a disconnect that may exist between the educators and thought leaders we interviewed and what the mainstream educational community we surveyed believes.

Among those surveyed, four out of five agree that cooperation and collaboration are different, but they do not always understand the impact of the differences until they spend time thinking about them.   But they also give collaboration an edge – a slight edge – over cooperation in terms of net end results.

Each of these benefits scores four stars or better out of five in terms of the impact of collaboration:

- Improving end result of a project
- Fostering shared responsibility
- Encouraging peers to challenge one another
- Fostering critical thinking
- Deepening understanding of specific topic
- Improving learning outcomes
- Broadening understanding of a variety of topics

In other words, collaborative skills can be an underpinning to final deliverables (end results) *and* improving learning outcomes, which are measurable, along with those things harder to measure: deepening the soft skills related to shared responsibility, debate, critical thinking, and understanding of both specific and a variety of topics.

> Collaboration skills are the #1 thing in my class. Everything we do is project-based learning; nothing is oriented to the individual. We work with people for rest of our lives, so need to learn this.
>
> – Todd Nesloney, Principal, Navasota Intermediate School, Co-Founder, The 3 Tech Ninjas , U.S.A.

> If you watch two learners working on something together, you see that their learning is deeper. They are the ones making the discoveries and asking questions, and consequently teachers are not prescribing all of the information to the children, and instead letting the children have ownership of their learning.
>
> – Gareth Hancox

> Collaboration is important for achievement if it's not focused just on knowledge. But if learners are puzzle solving, that's where collaborative work kicks in. My students practice together & see different logic paths. My final exam is brand spanking new; can they solve puzzles never seen before? Collaboration makes their abilities to solve problems skyrocket.
>
> – Ian Fogarty

Participation in and Ownership of Education

Collaborative skills can play a role in both how learners "own" their education, respectively, and how teachers might best promote learners taking more ownership of their learning. Not everyone believes that learners intuitively know how to collaborate – only four out of ten agree that it comes naturally, and we explore ideas about how students learn to collaborate in greater detail later in this paper. On the other hand, almost universal agreement exists that it can be modeled or taught, and that learners themselves are a key element of the process.

As a result, nine out of ten survey respondents (92%) believe that collaboration promotes active participation among learners **(Figure 8)**, and a similar number believe that teaching collaborative skills helps learners take ownership of their education (88%). Educators are essential to the process, even though some disagreement exists concerning how far the role of educator should go. This is because collaboration appears to be perceived of as a *mode of teaching* more than as a *subject to teach*. Consequently, 91% believe that educators need to *formally learn how to foster collaboration skills* among their students, and 87% believe that learning how to collaborate should formally be included in education curricula. A similar 87% believe that collaboration is a *way of teaching*. But only 67% – still a large number – believe it is a *subject to teach.*
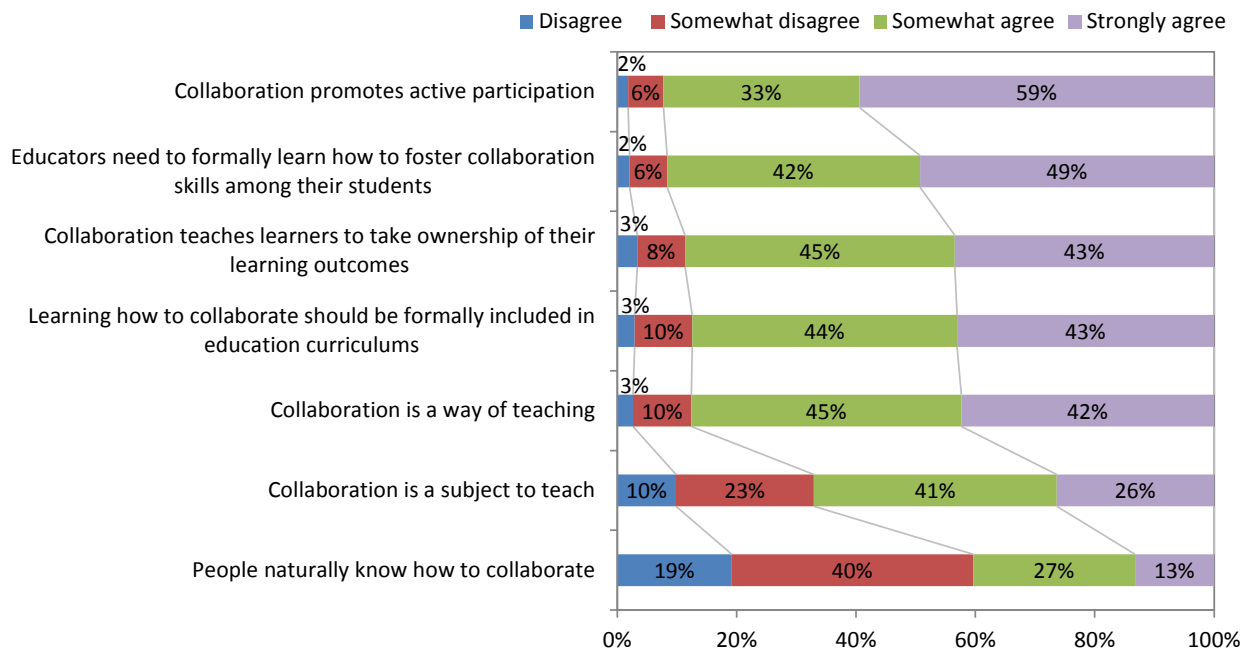

Figure 8 The Impact of Collaboration on Education at Macro and Micro Levels

> Collaboration addresses enjoyment - a kid who collaborates is likely to be more involved and immersed in their learning, in more control.
>
> — Scott Merrick, v-Learning Support Specialist and Teacher, Metro Nashville Public School, TN, U.S.A.

> Collaboration is more rewarding, which to me is more fun. Collaboration has more tenure and degrees of freedom – which brings on new ideas and expands personal relationships.
>
> — Renee Niemi, Director, Android and Chrome GBU for Work and Education, Google, U.S.A.

> We are inherently social beings and most students appreciate opportunities to work with others and interact with peers when they work on projects that don't just involve solo performance. The vision of students as drones in front of screens and watching videos, there are some kids like that who do better in a less social environment for learning, but in general, students enjoy collaboration with one another.
>
> — Dr. Wesley Fryer, Teacher, Yukon Public Schools and author, *Mapping Media to the Common Core*, Oklahoma, U.S.A.

Clearly the social element of collaboration plays to the strengths of the concept of the school as a place to assemble and learn collectively. But much was lost to 20th century concepts of collecting learners together but then teaching as the "sage on the stage." Collaboration as a concept and in practice appears to be primed to help address some of the needs for richer individualized learning – while maintaining the enjoyment of collective interactions.

Forming the Ability to Collaborate

Educators, behavioral psychologists, and others have been debating for years about the source of the ability to collaborate and whether it is innate, gained through experience, modeled, or taught. Of those surveyed, three out of five (59%) disagree with the concept that people naturally know how to collaborate. But everyone agrees that it can be acquired – the big question is how.

Experts interviewed for this paper hold a mix of opinions: some specifically state that collaborative skills can be taught, a similar number believe it is learned via modeling, and a small group believes it is innate. Many who believe it can be taught or modeled stress, however, that the process is complex and often *combines* the disparate elements: that it is best acquired through a mix of modeling, teaching, and then creating a process for something even bigger than the parts. Thus *experience* becomes a key element of teaching learners how to collaborate.

When selecting the best ways collaborative skills can be acquired, 62% of survey respondents say that *the ability to collaborate is gained through experience* is their first choice **(Figure 9)** and 24% rank it as their second choice (for a total of 86%). Of those who say it is *modeled (learned by example / observation),* 20% select it as their first choice and 45% select it as their second choice (for a total of 65%). A total of 31% believe that it can be taught formally as a first and second choice, and only 19% believe it is innate as a first and second choice.
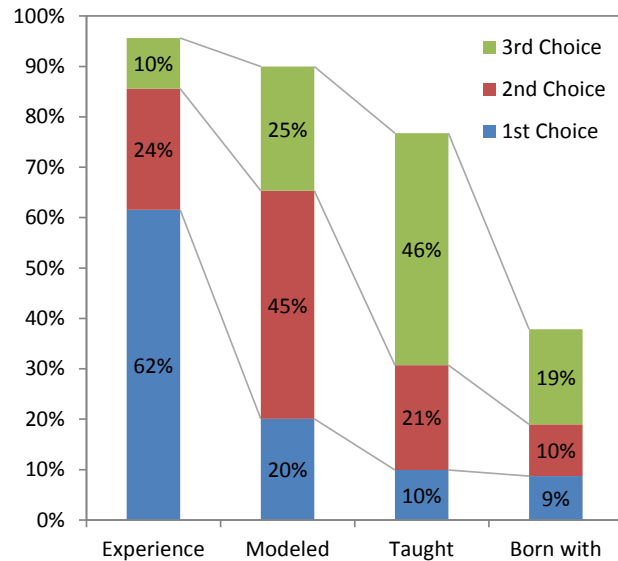
Respondents clearly believe that collaborative skills are gained best through experience. Many also believe that such skills may not so much be taught directly as acquired through the process of how we teach and how learners experience learning. This plays to the arguments of advocates of constructivist education, and suggests that there are methods that schools of education can introduce into their curricula, even as today's classroom educators can introduce those sorts of elements of experience via project-based or problem-based learning, study teams, and the like.

Figure 9 How Collaboration Skills Can Best be Acquired

Learning to collaborate is a combination of being modeled and being taught through a process. It's not just about putting people in a group – they need to understand the dynamics, verbal / non-verbal communications, learn respect for opinions, and actively listen. This can be taught by modeling / coaching, and promoting listening, respect, and "group power."

– Lea Bentley Castillo, Manager, Texas Educational Telecom Network (TETN), Texas, U.S.A.

Collaboration is a multi-dimensional skill set - a mix of soft skills and hard skills, including the ability to lead *and* participate. If you are leading there are answers to (questions like) how do you facilitate? How do you read body language, manage people who are dominant, etc.? The introverted can be uncomfortable. You have to deal with controversy, differing points of view, and navigate. It's a lot more work and is a complex mix of people skills.

– Renee Niemi

Personal individuality has a significant meaning within our present society. But like our ancestors, we still follow basic herd animal instincts. We need our community for feedback, encouragement, and also for advice, so we have to teach collaboration skills to enable our learners to grow to be able to be successful in life e.g., as partners, colleagues, or business people.

– Mathias Elsner, Primary School Teacher, Germany

As Doug Brown of STEP-A International puts it succinctly, "you must present a problem-based learning challenge. If they solve a problem, they work together. And the collaboration comes through that." Those interviewed offer a wide set of activities related to project management, problem-based learning, and the role of educator as facilitator. This role as facilitator implies a strong hand on one side of the equation – the instructor – but that strong hand also must leave room for experimentation, failure, and the benefits that can come from learning from failure.

We have to train our students to work collaboratively. Via structured tasks, it is possible to train our students. Teachers need ways of facilitating and then critically analyzing the collaborative behaviors that are developing. It's more about facilitation, not direct training of learners. – Gonzalo Garcia	I've thought for a long time we should teach project management via project teams and distributed teams. There are different frameworks and tools. The more balls in the air, the more important it becomes that you get a systematic and trusted and reliable way of managing the project. – Dr. Wesley Fryer	We have started to use the philosophy of letting students fail. It is hard for teachers to do that! But so far it is working. The idea is that we let students loose, then step back, and, the first time around, let students fail. This is an important lesson in life. Then we come back, ask what went wrong, get them to reflect on what went wrong, and learn from their mistakes. If the next time they fail again, ok, but if for the same reason, we need to intervene. – Simon Johnson

That willingness to allow learners to learn from failure has an inherent benefit in that it provides for ongoing engagement between educator and learner (and learner teams). It also requires a different style of teaching on the part of educators – a willingness to focus on process as well as content.

Overcoming the Challenges in Embedding Collaboration in the Classroom

Barriers and Challenges

Are educators ready to tackle the challenge of adopting a focus on collaborative skills in the classroom? Three out of four (77%) surveyed believe it is worth taking the time to teach. But it will come as no surprise that the aforementioned "teaching to the test" is the single biggest barrier to teaching collaborative skills: three out of four (76%) believe teaching to the test is somewhat or very much a barrier. Rigid class schedules, reluctance to loosen classroom control, inability to measure effectiveness, and lack of time for PD all fall more or less in the same framework: 63% to 68% of those surveyed believe these are somewhat or very much barriers. Lack of leadership at the school level appears to be less of a barrier, yet more than half (57%) believe leadership is somewhat or very much an issue.
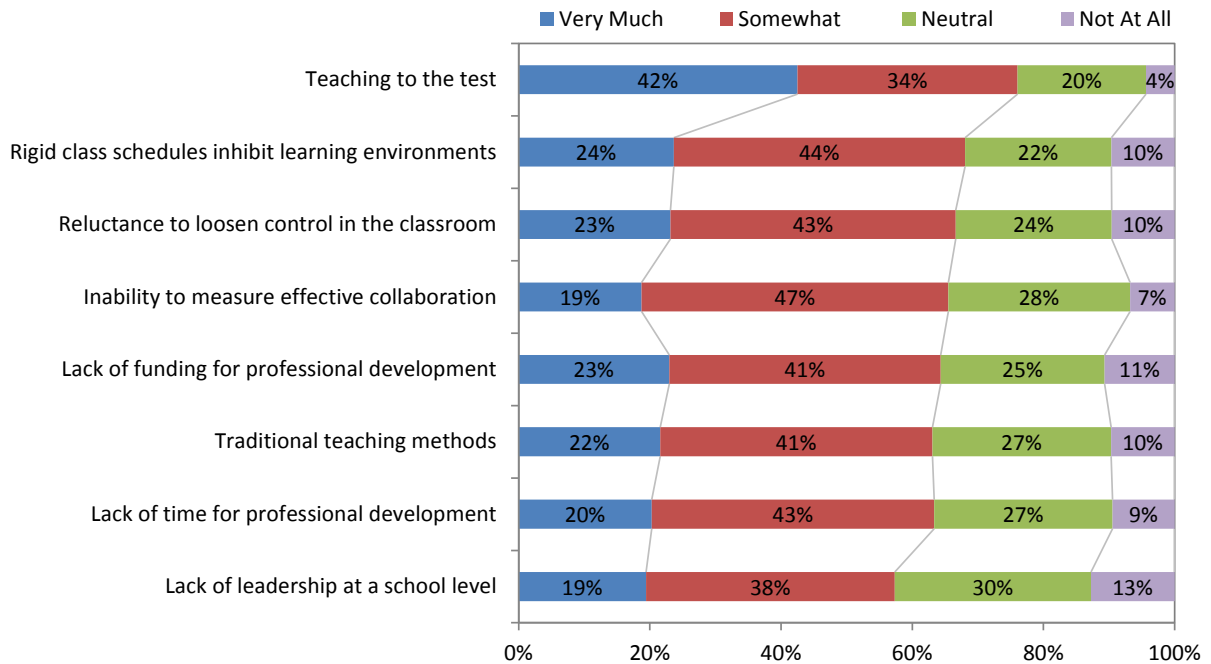
Figure 10 Obstacles to Adopting More Collaboration in the Classroom

The pendulum has not yet reached its apex in terms of relentless focus on mandated testing. As said earlier, almost everyone interviewed for this paper believes that too much focus is placed on testing and mainstream media participates in the process of promoting the idea that testing is the only and primary method of ensuring school accountability. Some argue, however, that even with the focus on testing, educators can and should seek to overcome the obstacles (as a start) through their own classroom activities and behaviors. This ranges from relinquishing some aspects of classroom control to while simultaneously finding new methods of measuring successful collaborative activities.

So much focus is placed on results. The pressure on teachers is so great that the primary focus narrows to the outcomes of tests. When pressure comes, the habit of defaulting to old fashioned methods reappears. Yet those don't work. Not all teachers are prepared to hand over learning to the learners. That is fundamentally it. Teachers need to be comfortable in allowing children to know more than them and to be allowed to explore and demonstrate that. Not all teachers have that confidence.

– Janet Hayward, Head of School, Cadoxton Primary School, United Kingdom

We need to teach kids how to manage and be part of project teams. We tend to narrowly measure student achievement today in terms of report cards. I'm not aware of measures that are taking into account collaboration.

– Dr. Wesley Fryer

Teachers in formal lessons in classrooms do not measure collaboration. They are measuring individual achievement.

– Professor Don Passey, Professor of Technology Enhanced Learning, Department of Educational Research, Lancaster University, United Kingdom

Many of the new approaches will be pedagogical in nature, but there is some room for technologies to play a key role in helping facilitate change.

The Role of Technology in Helping Facilitate Collaborative Learning

While some types of technologies (media, display, and computers) have been around for decades, the promise of digital technologies is only beginning to reach classrooms in a ubiquitous way, via 1:1 educational computing initiatives, bring-your-own-device initiatives, digital publishing (e-books), and new types of assessment tools.   As a result, it could be said that technology is just entering its post-adolescence, maturing enough to serve as a tool for collaborative learning.

As shown in **Figure 11**, only about one third of those surveyed (35%) believe that technology is used often or always in their schools or classrooms to facilitate collaboration. Another 54% believe that it is used sometimes, and 11% say rarely. This suggests that there is great room in which technology can grow as a tool for helping facilitate collaborative learning.   In addition, institutions that place a high focus on collaboration are more likely to use technology often or always (41%) than those that place a low focus on collaboration (27% - a 14% difference).
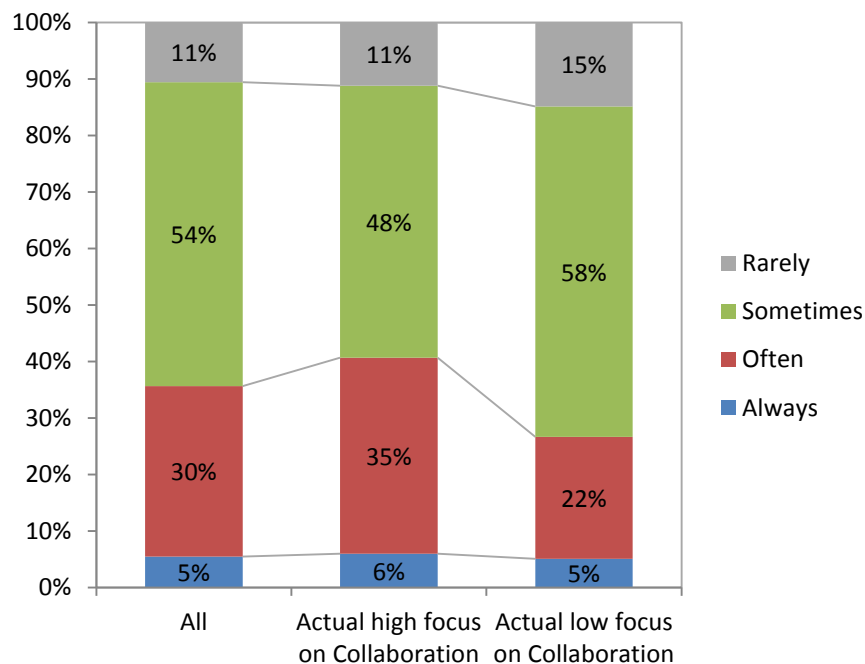
Figure 11 Extent to Which Technology is Used to Help Facilitate Collaborative Learning

Among those interviewed, there is great optimism concerning what collaborative learning – and in some cases technologies – make possible, tempered among some by frustration with politicians, policymakers, and the slow rate of change. Those most enthusiastic about new technologies as a mechanism for fostering collaborative learning see technology as a means to an end, not an end in itself. They see the excitement in "the real change:" how learners are getting excited about learning, conducting peer-to-peer learning, and wanting to be in the classroom making new discoveries.

The thing I see to be really successful at the moment: the use of digital technology as it engages and enables children to collaborate. They can then share what they have produced together. With tablets at the moment, you can have 2-3 children working together on a piece of work, a movie, reflecting together and talking, co-constructing. When I see some of our 4-5 year-olds working together, that is so exciting, but with that is a huge responsibility. If children are learning together in this way at this stage, how do we provide the necessary building blocks to enable progression?

– Janet Hayward

We start by giving them permission. Then decide what kind you want. If you have ever seen kids play a video game or use an application, you will see that no teaching is needed! They naturally do it. If you see two kids on Minecraft, note we don't have to teach it.

– Dr. Scott McLeod, Director of Innovation for Prairie Lakes Area Education Agency, and author, *What School Leaders Need to Know about Digital Technologies and Social Media,* Iowa, U.S.A

We need to monitor how students are doing, and leverage technologies that are offering teachers a whole new set of tools to do things slightly or radically differently. But this will only work if we change how we teach. We need to train to teach using technologies. All sorts of technologies have been deployed where schools did not show the ROI because they did not prioritize training.

– Lord Jim Knight

Of course technology has its own "wow" factor among some learners. But the point is that those interviewed mostly agree that technology plays a different role at different grade levels, and the technologies themselves must match the pedagogical goals at each grade level.

What Else Can Help Improve Collaborative Skills in Education?

Experts interviewed believe that much more than technology adoption is essential to improving how collaborative skills are delivered to learners.   They take a nuanced, multilateral approach, stating (often overtly) that there is no single silver bullet that will change pedagogy overnight. Among the areas that receive numerous mentions from thought leaders, practitioners, and administrators are the following:

- **Greater investment in PD and personal learning networks (PLN's)**. Why? Partly because PD and PLN's offer the best opportunity for educators themselves to incorporate collaborative techniques and technologies into the classroom, and partly because, as also was stated overtly, far too little is spent on PD.

Create a competency framework. The art of questioning as a team moves through the latter stages of collaboration, with types of questioning as part of a process, taking one step at a time. This would be quite helpful and useful. And we need to make it look more exciting for learners and achievable for teachers. Older and more set-in-their-ways teachers should be given examples too.

– Hannah Jones

Teaching is right at the heart of quality. Yet in this country we spend on average $75 per pupil per year on teacher training. Very little of that training budget results in any improvement in quality of teaching. It's a very inexact science in how well sustained, ongoing development of teaching results. I passionately believe the training of the teachers is essential.

– Lord Jim Knight

Teachers need to be comfortable first with collaboration. Were I to recommend to teachers to start 21st century learning activities, I would suggest working with a colleague in a school who has done this before. Create project-based lessons, then collaborate between two classes, or (in elementary or primary school) collaborate with another local school, and use Skype or Twitter or other social media to collaborate on a larger scale…Then they need to be able to assess collaboration. That's what stops teachers: what do I assess? We don't know how to assess every member of that team and how they are doing – who took lead roles, how do you do a peer assessment of students and how effective is the rest of team?

– Simon Johnson

- **New methods of assessment**. Why? Because *if* educators have no choice but to be yoked to grades and accountability, methods of assessing the teaching and learning of soft skills like collaboration can at least support the assessment model.

It's important to acknowledge that there will not be an equal balance of input from each contributor, but there needs to be fairness. Personalized learning is important - it's a razor edge to walk: what can the individual potentially do? Then you tailor the learning and resulting expectations.

– Scott Merrick

The top thing: we must change how we assess. It grieves me to say so, there are still too many people who teach and who see their job as getting children through the exam system.

– Doug Brown, Director, STEP-A International, and Former Head of ICT in Schools, England, 2000-2008, United Kingdom

So I would change testing. And change the idea that final exams and tests are the right product. It's the kid walking out of the room that's the product. It has nothing to do with the final exam. I would structure my classroom so assessment policy and day to day classroom matches that philosophy. So any exam has to be based on new questions.

– Ian Fogarty

- **Greater leadership and thought leadership.** Why? Because, as discussed earlier and below in this paper, change only arrives when the problem is understood well and the solutions are advocated at every level in education. This also means a balance struck between control over content and enablement of educators to determine content.

The argument for the importance of collaboration needs to be very strong if it is to be taken up by leaders and policy makers. Once we have that strong argument, the next question will be how we measure it. The two key things I suggest are: do we have strong argument for it, and then how do we start to explore ways to measure collaboration and pilot that and put it into practice.

– Professor Don Passey

School boards should give more freedom to teachers in how they get to final levels of a subject. Almost 50% of the time they should say "please don't use that book, go create something different!" A lot of school boards don't give freedom to teachers.

– Boris Berlijn, Geography / Economics / World Citizenship Teacher, Netherlands

We need to increase the awareness level. We have seen an increase in collaborative learning because, I hate to say it, of YouTube! People post what they have done, others then see it. Teacher Tube, Sophia, other websites are part of this. People need models and examples, not just from the movies. Online memberships in communities of practice with professional instructors. Change does not happen from one idea. Create tools like mind-mapping tools, make one's ideas free as an e-book over the Web, etc., to get more ideas about collaboration.

– Professor Curtis Bonk, Professor of Instructional Systems Technology, Indiana University, U.S.A. and author, *The World is Open*

- **Changing pedagogical and physical approaches to teaching.** Why? The "sage on the stage" model, as more than one thought leader stated, has been proven, as a primary teaching mode, to have outlived its usefulness. Groups of learners collaborating in teams, in classrooms organized in entirely different ways, can help transform the learning environment both intellectually and physically. Team teaching and sharing best practices can be an equally powerful element for change.

It is important that we have variety of teaching and learning styles. There are times when individuals retreat. Whether a diverse learner or logical learner, we need a range of opportunities for individuals, paired groups, different forms. This is highly important and helps develop different skill sets. We do orchestrate them, and primary schools are good at project-based learning. They let learners take different roles. In secondary we are getting better at that, with more creative curricula, entrepreneurial programs, and a broader scope for extended time tabling and collaborative projects. But it takes time to develop rich curriculum.

– Hannah Jones

Fostering teamwork is the challenge, but ask the kids: are they engaged? Do they do work on their own time? Or are they just going through the motions versus thinking, 'wow this is awesome, we can do this, hey teacher look at what I did!' If meaningful work is being done, depending on where they are as individuals, how do we accomplish that? Then they need practice, planning skills, and methods of allocating work. That calls for the coaching of kids. They're not used to that kind of environment. Over time they get better but at the beginning it requires more structure. So much about this is a dialogue with students, as even young students can do powerful work. It doesn't have to be the teacher driving it.

– Dr. Scott McLeod

I think any teacher can do collaboration in the classroom. But collaboration amongst teachers is always needed also. If you collaborate with your colleagues in the classroom or community of teachers, you can do many things. You can foster collaboration between students in different classes, at the same school or different schools. Using technology like video conferencing gives you many opportunities to do it as does using the Internet, searching, creating debate activities, presentations, and group competitions or some way of starting and solving problems are important – but with a collaborative point of view. You have to break the routines of individual work. Of course students in a class will return to individual behavior, but there are little steps that can make collaboration routine.

– Gonzalo Garcia

Why This Matters More Than Many Think

Benefits for Society

Collaborative skills are perceived as essential both at a macro (societal) and a micro (learner level). In fact, more than nine out of ten respondents see it as critical at the macro level. A total of 94% agree that collaborative skills are critical to the making of a mature society, and 92% see it as critical for economic growth. At the micro / learner level, similar numbers (90%) believe that collaborative skills are critical for successful learning and almost as many believe that they are critical for a person to be successful (89%).   (We note one small geographical difference: more North American respondents – 55% – than UK respondents – 44% – believe that collaboration is critical for a person to be successful.)
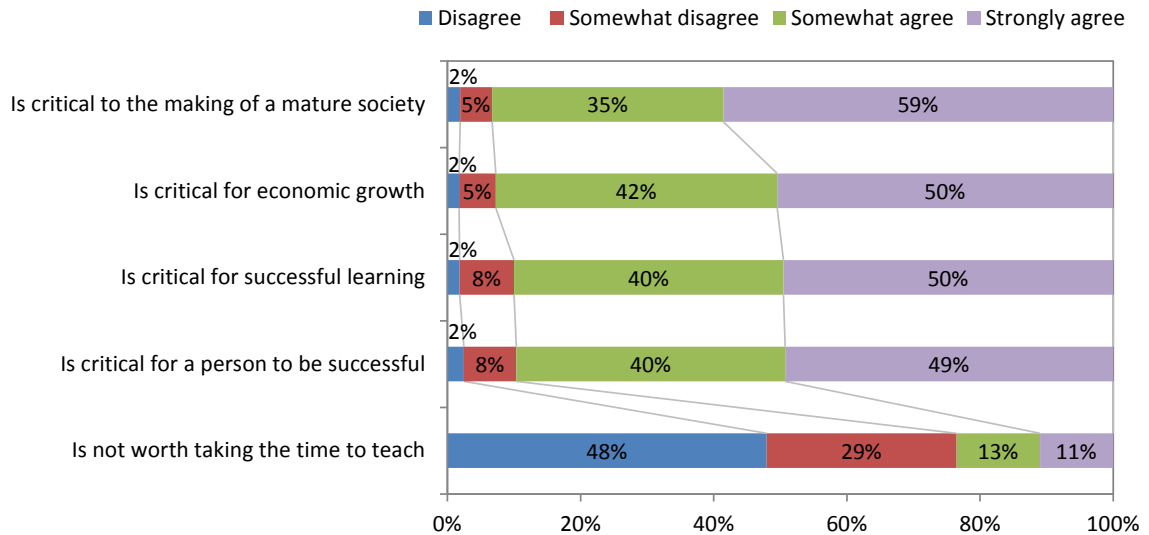
Figure 12 Benefits of Collaborative Skills to Society

> Look at schools that focus on problem-based learning. Student enjoyment and engagement is really high. There are many opportunities to individualize and personalize learning. When we give students opportunities to collaborate, especially when we create opportunities that impact community, kids go out and make a difference to the world. Whether in the larger community, or online, or overseas, kids can get excited about making a dent into big issues. When kids are in those learning spaces, they just run with it and develop the soft skills employers already need.
>
> – Dr. Scott McLeod

Workforce Development

Two out of five survey respondents mentioned earlier believe that learners are not being well prepared for the workforce. They would find allies among those who know best: those involved in workforce management. The National Education Association reports[1] that according to a 2010 study conducted by the American Management Association – the AMA 2010 Critical Skills Survey — the "Four Cs" will become even more important to organizations in the future. Three out of four (76%) executives who responded to the AMA survey said they believe these skills and competencies will become more important to their organizations in the next three to five years. Additionally, 80% of executives believed fusing the "Three Rs" and "Four Cs" would ensure that students are better prepared to enter the workforce. According to these managers, proficiency in reading, writing, and arithmetic is not sufficient if employees are unable to think critically, solve problems, collaborate, or communicate effectively.

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[1] http://www.nea.org/assets/docs/A-Guide-to-Four-Cs.pdf

More recently Time Magazine in the U.S. reported a different take on the problem [2] with two significant data points.

> "As much as academics go on about the lack of math and science skills, bosses are more concerned with organizational and interpersonal proficiency. The National Association of Colleges and Employers surveyed more than 200 employers about their top 10 priorities in new hires. Overwhelmingly, they want candidates who are team players, problem solvers and can plan, organize and prioritize their work. Technical and computer-related know-how placed much further down the list."

The magazine also reported on a separate employer survey, this one by staffing company Adecco, in which 44% of respondents cite soft skills, such as communication, critical thinking, creativity and collaboration as the areas with "the biggest gap." Only half as many say a lack of technical skills is the pain point.

Woods Bagot, a global architectural firm that works closely with institutes of higher learning, commissioned research firm Global Strategy Group to ask: Are recent college graduates ready for the rigors of today's workforce?   The answer is:

> "Of 500 business decision makers surveyed, close to half (49%) believe today's graduates are less prepared for work than they were 15 years ago.[3] The majority (70%) of C-suite executives say that fewer than half of graduates entering their companies have the skills to succeed in entry-level positions.   Many top executives also believe that less than one quarter (21%) of graduates applying to their company have the skills to advance past those entry level jobs.   The survey shows that business leaders feel the three most important skills to have when entering the business sector are problem-solving (49%), collaboration (43%) and critical thinking (36%)."

Wainhouse Research notes that the same skills prioritization cited by educators, parents, and students in this report completely mirror that set as cited by business decision makers: problem solving, collaboration, and critical thinking.

No less than U.S. President Barack Obama, as quoted in the NEA report mentioned earlier, has stated:

> "I'm calling on our nation's governors and state education chiefs to develop standards and assessments that don't simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical thinking and entrepreneurship and creativity."

A concern about graduates entering the workforce crosses all geographies.   In the UK, a recent survey of 198 employers indicated that, for graduates, being good at communicating, a team player, confident

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[2] http://business.time.com/2013/11/10/the-real-reason-new-college-grads-cant-get-hired/

[3] http://www.vault.com/blog/workplace-issues/are-college-graduates-ready-for-work-new-survey-says-no

and analytical were all more important than having technical knowledge. The latter was ranked 24th out of 30 competencies desired by employers at the recruitment stage.[4] And the University of Liverpool surveyed 500 recruiters and determined that 64% believe that when hiring graduates, employability skills are more important than any specific occupational, technical, or academic knowledge gained from the graduate's degree.[5]

So the workforce is asking for collaborative skills. Schools are focusing too much on teaching to the test and individual achievement in a workplace that requires working as teams. Collaboration is ranked as the second most important skill on which to focus, after problem solving. Truth be told, it does not take rocket science to know that collaborative skills have significant benefits:

- Improving end result of a project
- Fostering shared responsibility
- Encouraging peers to challenge one another
- Promoting critical thinking
- Deepening understanding of specific topic
- Improving learning outcomes
- Broadening understanding of a variety of topics

Thus the benefits to society are significant, not just from an economic perspective, but from the perspective that developed nations need a citizenry that is participatory, not alienated; collaborative, not partisan. It starts small: collaboration is not specifically a course or a curriculum. It is a way of teaching and learning that can be embedded in process, organization, deliverables and outcomes.

We are only at the beginning of the journey in understanding how to foster and measure collaborative skills. And one thing is clear: Collaborative skills may or may not benefit from technologies, but technology can open up the walls of the classroom and enable anytime, anywhere learning.

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[4] http://www.bbc.com/news/education-28560758
[5] http://www.liv.ac.uk/careers/students/employablility/skills_employers_want.htm

Collaboration is learning that is greater than the sum of the parts. When children learn and explore together, that's when real engagement in learning can happen. In the use of technology in schools we use models and Lego and a range of programs. We see learners truly engaged and bouncing thinking off of each other. That is true collaboration, enabling deep learning because the children are constructing and deconstructing the learning together, learner to learner.

– Janet Hayward

The research in learning tells us that teachers' complete knowledge can prevent them from understanding a first-time learner's issues in learning. The best teachers learned something just before you did. We know most students prefer to learn from other kids their age. And kids can create very powerful content, such as tutorials to help classmates learn. We know it can be very effective for children to collaborate. And we know that online almost 100% of learners ask questions. So we know that communications that are face to face compared to online have different strengths. If you add the two together you get better collaboration.

– Alan November,
Senior Partner,
November Learning, U.S.A.

The great thing about collaboration: students no longer are an island, and have support networks so that they don't just learn from teachers and from other students in their group. And they can also contribute their own skills to a mini-support network.

– Simon Johnson

It seems counter-intuitive that technology and data might help measure soft skills like collaboration and the teaching of collaborative learning. But nothing could be further from the truth. As said by Lord Jim Knight in the United Kingdom:

> *One final thing: if we embed technology more in the way we run schools, how we teach, and relate to people and parents, we will generate a load of data and from that will have a much more rounded set of data points about how well schools are doing. This might reduce the heat on the high stakes tests, because we could focus on how learners are enjoying their education, how they are achieving when they leave schools, and what sort of discipline record is a part of that process: all those things are being measured and can be part of accountability measurements beyond how the kid is doing in science.*

In other words, we are on the edge of a large opportunity to drive the discussion around "big data" up one notch. This concept is all the rage currently, but still somewhat stuck in conversations surrounding what big data consists of and how to best leverage and protect it. While the discussion regarding big data is extraordinarily pertinent to the larger "how do we improve education" discussion, what might be more pertinent is spending more time focusing on collaborative skills – as well as creativity, communication, and most importantly critical thinking – and how to best foster them within learners in new and innovative ways that prepare them for the 21st century – and the jobs that lie ahead.

Appendix

Interview Contributors

Name	Title /Function	Organization	Location
Boris Berlijn	Geography / Social Studies / World Citizenship Teacher, grades 8-12	Amsterdam area public school	Netherlands
Ruth Litman Block	Innovative Practices Consulting, and former Director, Virtual Learning Center, Cooperating School Districts, St. Louis, MO	MNR EDtech Consulting, LLC	U.S.A.
Prof. Curtis Bonk	Professor, Instructional Systems Technology Department, Author *The World is Open*	Indiana University	U.S.A.
Doug Brown	Director, STEP-A international, and Director of the Learning and Former Head of ICT in Schools, England, 2000-2008	Strategic Technology in Education Policy Advice (STEP-A) International	UK
Lea Bentley Castillo	Manager	Texas Education Telecom Network (TETN)	U.S.A.
Mathias Elsner	Primary School Teacher	Berlin Area public school	Germany
Ian Fogarty	High School Chemistry and Physics Teacher	Riverview High School	New Brunswick, Canada
Wes Fryer	Elementary STEM Teacher, Author *Mapping Media to the Common Core*	Independence Elementary, Yukon Public Schools, OK	U.S.A.
Gonzalo Garcia	ICT Coordinator and Math Teacher	SEK-Atlantico International School, SMART Exemplary Educator	Spain
Gareth Hancox	Primary School Teacher	Pheasey Park Farm Primary School	UK
Janet Hayward	Chair	National Digital Learning Council for Wales	UK

Name	Title /Function	Organization	Location
Hannah Jones	Founder & Director / Previously Special Projects Director at the National College for the Leadership of Schools	Connected Learning	UK
Simon Johnson	ICT Teacher and Microsoft PIL Lead teacher	Highfields High School	UK
Lord Jim Knight	Director, STEP-A International and Former Schools Minister, United Kingdom	Strategic Technology in Education Policy Advice (STEP-A) International	UK
Jennifer D. Klein	Global Education Consultant and CEO	PRINCIPLED Learning	U.S.A.
Scott McLeod	Director of Innovation, co-creator of the *Did You Know? (Shift Happens)* video series and author, *What School Leaders Need to Know about Digital Technologies and Social Media*	Prairie Lakes Area Education Agency, Iowa	U.S.A.
Scott Merrick	v-Learning Support Specialist and Teacher	Metro Nashville Public Schools	U.S.A.
Renee Niemi	Director, Android and Chrome GBU for Work and Education, and formerly Senior VP, Communication Solutions, Plantronics[6]	Google	U.S.A.
Todd Nesloney	Educator, Author, Presenter	Waller ISD , Texas and Co-Founder, 3-Tech Ninjas	U.S.A.
Alan November	Senior Partner and Founder	November Learning	U.S.A.
Prof. Don Passey	Professor of Technology Enhanced Learning	Department of Educational Research, Lancaster University	UK
Ellen Wagner	Chief Research and Strategy Officer, PAR, and Former Executive Director WCET, former Global Education Market Director, Adobe	PAR (Predictive Analytics Reporting) Framework and Sage Road Solutions	U.S.A.

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[6] Ms. Niemi was associated with Plantronics at the time of the interview, and has since joined Google.

About the Authors

Alan D. Greenberg is Senior Analyst & Partner at Wainhouse Research. He is distance education and e-Learning practice manager at Wainhouse Research, and contributes to WR's Personal and Web Collaboration program. He has conducted research into dozens of distance learning networks and e-learning users, authored reports on the efficacy of technologies for education, and numerous white papers and reports on lecture capture, web conferencing, video conferencing, virtual worlds, and interactive whiteboards as applied for education and e-Learning. He also has consulted to many states, universities, and regional educational consortia on distance education strategies, and received the 2010 award for Outstanding Leadership by an Individual in the Field of Distance Learning from the U.S. Distance Learning Association.   Alan is editor of The Wainhouse Research Bulletin, a free newsletter available at www.wainhouse.com. Alan holds an M.A. from the University of Texas at Austin and a B.A. from Hampshire College. He can be reached at agreenberg@wainhouse.com.

Andy Nilssen is a Senior Analyst at Wainhouse Research and Manager of the Web Conferencing and Collaboration Practice. Andy has been analyzing the rich media communications market for over a decade. He previously held management positions in marketing for PictureTel, Sun Microsystems, and two start-ups. Andy earned his BSEE and MBA degrees at the University of New Hampshire, and holds two ease-of-use related patents. He can be reached at andyn@wainhouse.com

About Wainhouse Research

About Wainhouse Research: WR provides strategic guidance and insight on products and services for collaboration and conferencing applications within Unified Communications. Our global client base includes established and new technology suppliers and service providers, as well as enterprise users of voice, video, streaming, and web collaboration solutions. The company provides market research and consulting, produces conferences on technology trends and customer experiences, publishes a free newsletter, and speaks at client and industry events. More about WR.

About SMART Technologies

SMART Technologies, Inc. is a leading provider of technology solutions that enable inspired collaboration in schools and workplaces around the world by turning group work into a highly interactive, engaging and productive experience. SMART delivers integrated solutions of hardware, software and services that are designed for superior performance and ease of use, and remains a world leader in interactive displays.