BootUp PD 2022-2023
Instructional Coach Report

Evaluation conducted by

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Purpose

A unique aspect of BootUp's Professional Development model is their coordination with Instructional Coaches (ICs). ICs are district or administrative-level teachers who support other teachers in their efforts to teach coding. Each district that works with BootUp must commit to ensuring that an IC will work with the district's teachers. This helps to address issues of attrition (i.e., teachers leaving the district), onboarding, and on-going training.

This year, we were interested in the experience of ICs. Specifically, we wanted to know what their job duties entail, how much of their time they spend supporting the teaching of coding in the classroom, how many teachers they support, as well as the successes and challenges that ICs face. Knowing this information may help BootUp to more clearly communicate IC expectations with partner districts. Additionally, this information may help BootUp to identify and address possible barriers to successful implementation of coding in partner schools.

Executive Summary

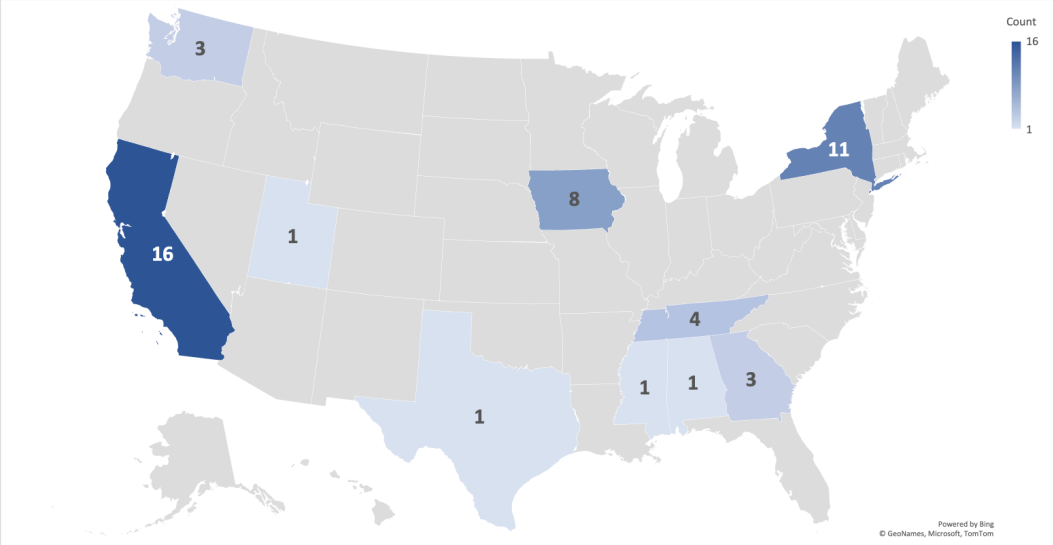
1. **Demographics**
    a. 94% of ICs (46/49) were trained to teach coding through BootUp PD.
    b. ICs are experienced teachers, with over 19 years of teaching experience, on average. However, they only have 3.5 years of experience as ICs.
    c. Twenty (40.82%) coaches had no coding experience prior to becoming an IC.
2. **Classroom Teaching**
    a. ICs report teaching at least 3 subjects, on average.
    b. ICs teach about 5 different grade levels, on average.
3. **Supporting Other Teachers**
    a. The average IC supports 27 teachers; most say this is a reasonable load.
    b. ICs spend nearly 45% of their time fulfilling IC responsibilities. Other duties include teaching, administration, PD, curriculum development, modeling, working with students and managing technology.
    c. About 42% of ICs make site visits weekly or more often. Site visits entail: providing resources, coaching, planning, model teaching, and co-teaching.
    d. ICs use BootUp resources about 1x/month to support other teachers.
    e. Expectations for how coding will be taught varies by district. The most common expectations are that coding will be taught weekly.
4. **Being Supported as an IC**
    a. Most ICs collaborate with BootUp facilitators 1x/semester.
    b. IC expectations may be set by a variety of players, but “district personnel” and “principals” are the most common.
    c. ICs feel well-supported by BootUp. They feel slightly less (but still) supported by their district, principals, teachers they coach, and the community.

Recommendations

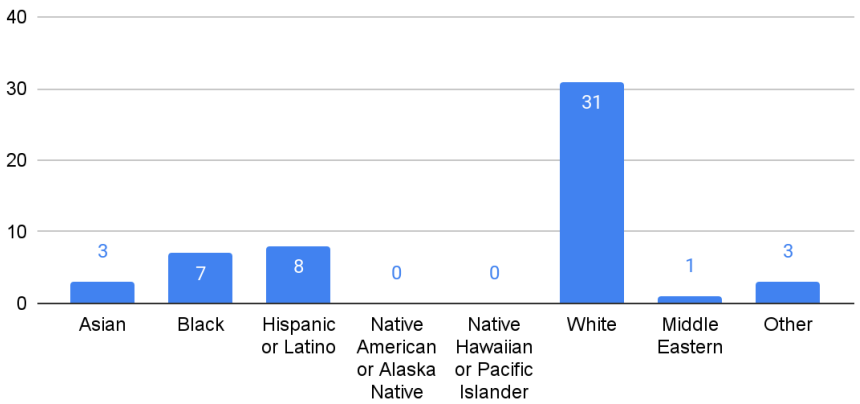
First, it's important to note that most ICs expressed that they really enjoy their role as ICs. They find joy in seeing other teachers. Based on the findings, there are a few recommendations that may help to further ensure that ICs are well-supported in their roles to support elementary teachers to integrate coding in the classroom.

1. Establish clear expectations for **time**.
    a. Teacher Time: Since principals and district personnel, not ICs, establish expectations for how much a teacher should actually implement coding in the classroom, this needs to be clearly communicated all the way down the line. This will enable ICs to point to a clear standard when working with teachers. It will also help teachers to know how much they should be addressing coding in the classroom.
    b. IC time: ICs have many responsibilities, with only about half of their time being spent on supporting other teachers to learn to code. Given the possibility of competing priorities, establish clear expectations for what portion of time should be dedicated to supporting other teachers' coding will provide clear guidance for ICs to know how to dedicate their limited resources.
2. ICs may need **continued training & opportunities to teach**
    a. ICs are enthusiastic about their role in supporting other teachers. They are also fairly new to coding themselves, expressing the lowest confidence with their own coding abilities. They operate largely on their own, only tapping BootUp resources once a month or less often. Bi-monthly training, opportunities to teach coding themselves, and opportunities to network with other ICs may help them to continue to build confidence and a repertoire of ideas for teaching coding.

Demographics



This survey was sent to all instructional coaches that have participated in BootUp professional development (PD) over the past 3 years (79 coaches representing 39 districts). Forty-nine Instructional Coaches (ICs) representing 22 different school districts across 10 states completed this survey. Fifteen districts were each represented by a single district. ICs reported having over 19 years of teaching experience, with about 3 ½ years of experience as an IC.

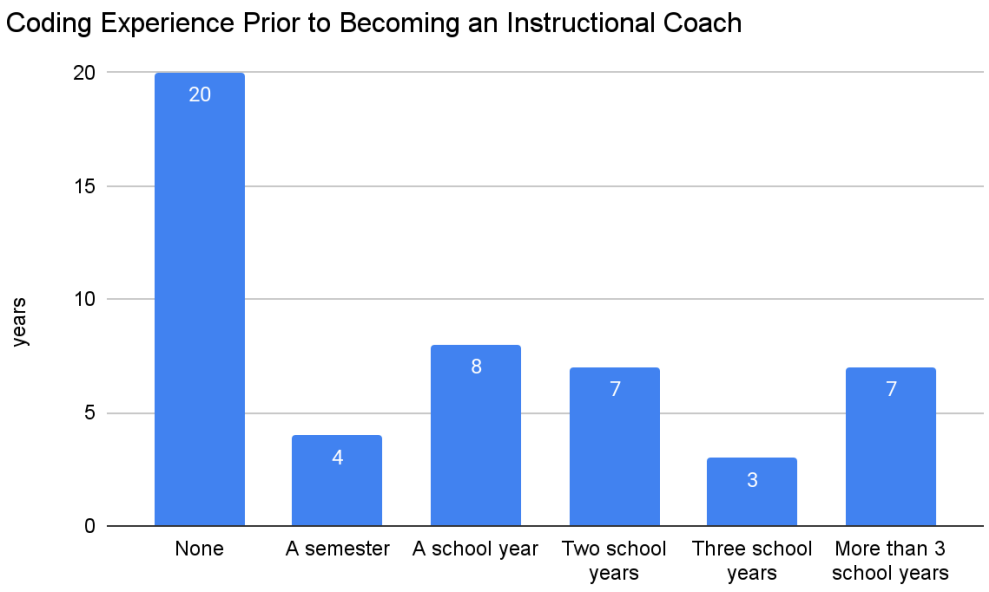


The racial and ethnic makeup of these teachers was primarily White (58.49%), with 13.21% identifying as Black. Just over 15% of respondents were Hispanic or Latino. Asian (5.66%), Other (5.66%) and Middle Eastern (1.89%) made up the remaining population.

Training

Nearly half of our ICs (49%) had less than one school year of coding experience prior to becoming an IC (see Figure 3.1). For many, BootUp was a primary experience in preparing them to teach coding. About 93% of ICs participated in BootUp's two main PD experiences— ScratchJr (for early elementary) and Scratch (for upper elementary). A handful of ICs participated in the newer trainings, which involve physical computing, and a course specifically designed for ICs to learn how to coach. Coaches rated BootUp as 8.59/10.00 when asked how well BootUp prepared them to be an IC, suggesting they found it to be an effective training.

Figure 1



While BootUp PD was effective and important for these ICs, it was not the first experience with learning to code for many. About 45% of ICs had participated in other coding training prior to the BootUp experience.

A Day in the Life

This section attempts to paint a picture of what an IC's experience looks like. These are general trends observed across our entire population. Individual experiences will undoubtedly differ based on district and school circumstances.

BootUp

Inasmuch as these ICs are part of the BootUP PD series, we were curious to know how it affected their day-to-day experience. On the one hand, ICs report using BootUp PD resources fairly frequently, with 77% using them monthly or more often. Despite this, ICs did not collaborate with BootUp professionals as frequently. Nearly 96% of ICs reported working with a BootUp professional monthly or less often. This indicates that, once trained, ICs largely operate on their own during a regular week, though they may have several spaced interactions with BootUp throughout the school year (about ⅓ reported monthly interactions).

Table 1

Other Subjects Taught by ICs

Subjects taught	count
General Elementary (K-6)	29
STEM	23
Computers	19
Language Arts	18
Mathematics	14
Science	14
Social Studies	12
Other	8
Art	5
Physical and Health Education	3
Music	2

Teaching

ICs teach much more than just computing. On average, ICs reported spending between 4 and 8 hours/week coaching, indicating that there are many other duties that occupy their time. The majority (59%) teach general elementary courses, with 47% teaching STEM and 39% teaching

Computers. As demonstrated by Table 3.1, it is apparent that ICs teach across the curriculum. In fact, ICs reported teaching at least three subjects on average.

In addition to teaching multiple subjects, ICs teach multiple grades. On average, each IC reported teaching five different grade levels. The most commonly taught grades were elementary (K-5), though between 11 and 16 coaches reported teaching secondary grades. Thus, while teaching multiple subjects may indicate that ICs are generalists, the fact that they teach multiple grades suggests that they're also specialists. This puts them in a unique position amongst their peers.

Self-Efficacy

ICs are looked at as the "coding experts" by their peers. Consequently, we were interested in better understanding ICs confidence to teach coding. When we asked them to evaluate their coding skills on a 10-point scale, ICs reported what might be considered a lower level of confidence (6.3/10), especially for an expert. That being said,their confidence to *teach* coding (7.8) and to teach the BootUp curriculum (7.7) both were in the moderately-high range, demonstrating that while ICs may continue to harbor some doubt about their own coding skills, they are more confident in their ability to teach coding to children and to other teachers.

I used an open-coding scheme to characterize teachers' rationale for their self-efficacy. For example, I characterized the following rationale as 'training,'

> "I feel prepared to support teachers to use Scratch and Scratch JR based on the BootUp professional learning that I participated in."

Coding teachers' rationales in this way enabled me to see if there were some reasons that lead to higher or lower ratings. For example, in Table 3.2, we can see that 13 teachers indicated that the BootUp curriculum itself was their rationale. What's more, these teachers all provided

higher ratings across the board than for any other rationale that was provided by more than a single teacher. One teacher, who indicated that the curriculum was the reason for their rating, explained it in this way,

> "The curriculum has been skillfully crafted, and its comprehensibility allows for seamless navigation. Furthermore, it effectively intertwines with fundamental subject matters."

Likewise, the teachers who rated their self-efficacy the lowest were those who indicated that they still lacked adequate knowledge of coding or the curriculum. One teacher put it simply as, "We have just started with BootUp in February, so I have a lot to learn yet," while another stated, "I'm still learning, but I have a lot more to learn." Comparing these rationales for their ratings may help BootUp to better understand how to increase ICs' self-efficacy for teaching coding. Basically, those who are able to recognize the foundation that the BootUp curriculum and training provide are more likely to rate their own confidence to teach coding higher.

Table 2

Teachers' rationale for their self-efficacy ratings

codes	count	coding abilities	elementary coding	BootUp curriculum
curriculum	13	7.00	8.69	8.77
experience	15	6.20	7.80	7.20
foundation	4	6.25	8.25	7.75
knowledge	9	6.11	6.56	6.89
lack of knowledge	7	6.29	6.29	6.71
teachers	1	9.00	10.00	6.00
technologically inept	1	3.00	5.00	7.00
training	9	5.89	7.00	7.78

Support

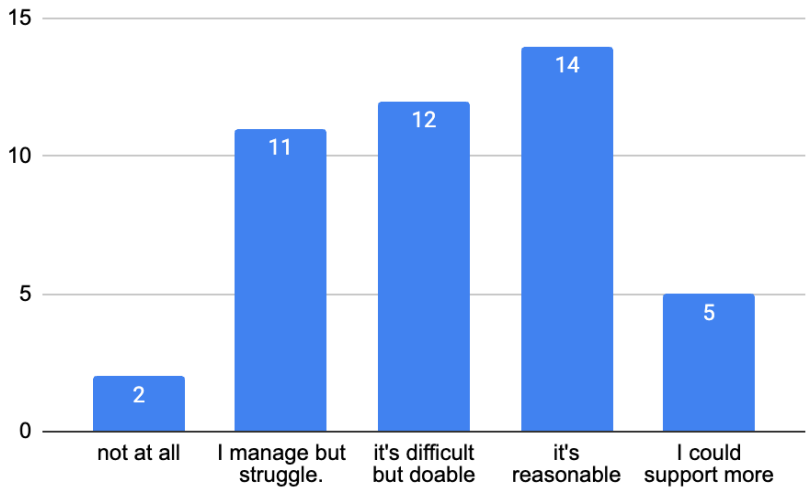
In this section, we look at several different ways in which ICs support and are supported in their role. This includes policy, practice, parents, and peers.

How do ICs Support Teachers?

First, we address the ways in which ICs support teachers. On average, IC reports that they support 27 teachers. I used the median to counter an extreme outlier that reported supporting 1000 teachers, which was 800 more than the next closest IC. When asked how sustainable they thought supporting this number of teachers was (See Figure 3.2), only two indicated that their load was unsustainable (and the person with 1000 teachers was not one of them!).

Figure 2

How sustainable is supporting this number of teachers?



In addition to teachers, it's helpful to understand how many schools an IC supports. The median IC supports two schools, which most report as being sustainable. Curiously, of the six ICs that reported their load was not sustainable, four coached teachers at two or fewer schools (with

two supporting 15 schools). Thus, the sustainability of an IC's load does not appear to correlate with the number of schools they're asked to support.

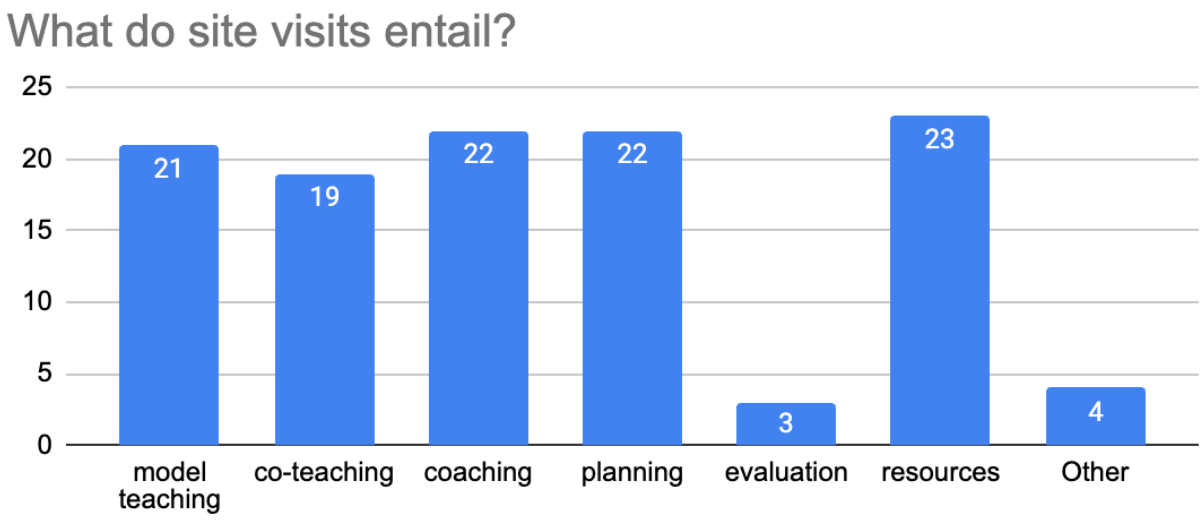
Table 3

Frequency of IC Site Visits

Frequency	# of ICs	Percentage of ICs
Never	8	18.18%
1x/semester	13	29.55%
twice a month	1	2.27%
monthly	3	6.82%
weekly	7	15.91%
2-3 times a week	3	6.82%
daily	9	20.45%

ICs report making site visits to teachers at varying rates (see Table 3.3). While 47% only make a site visit once a semester or not at all, 43% make site visits at least weekly. When an IC visits a school or a teacher's classroom, they engage in multiple activities (though not necessarily all in the same visit) (see Figure 3.3). Most ICs reported doing 3 different activities when visiting other teachers. While the most common was to provide resources, other activities included coaching, planning, model teaching and co-teaching, which were all almost equally popular. Thus, those preparing to become ICs should be comfortable with all of these activities. It also seems meaningful that ICs rarely conduct evaluations on site visits. This highlights their role in supporting teachers rather than judging them.

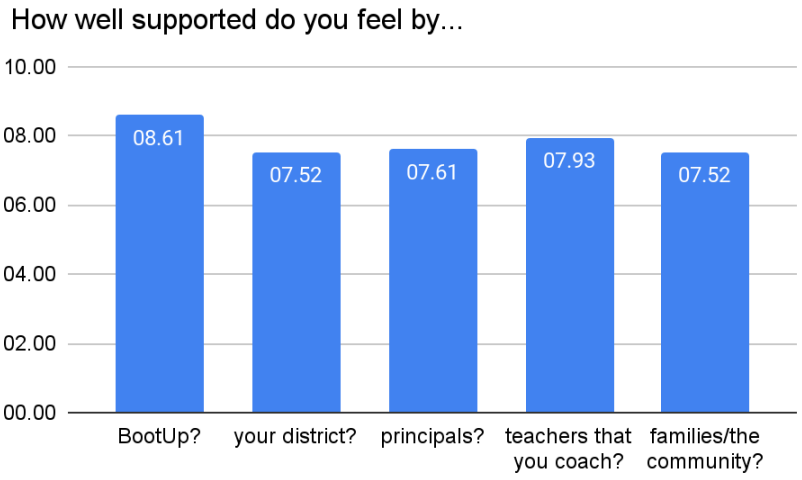
Figure 3



How Well are ICs Supported by Others?

In addition to supporting teachers, it's also helpful to know how well ICs feel supported by others. Some of this will be further explored in the "Expectations" section below. When asked to rate how well-supported they feel by different groups, ICs indicated they felt a moderate level of support (7-8 points out of 10) from their district, principals, other teachers and the community (See Figure 3.4). They felt a strong level of support from BootUp.

Figure 4

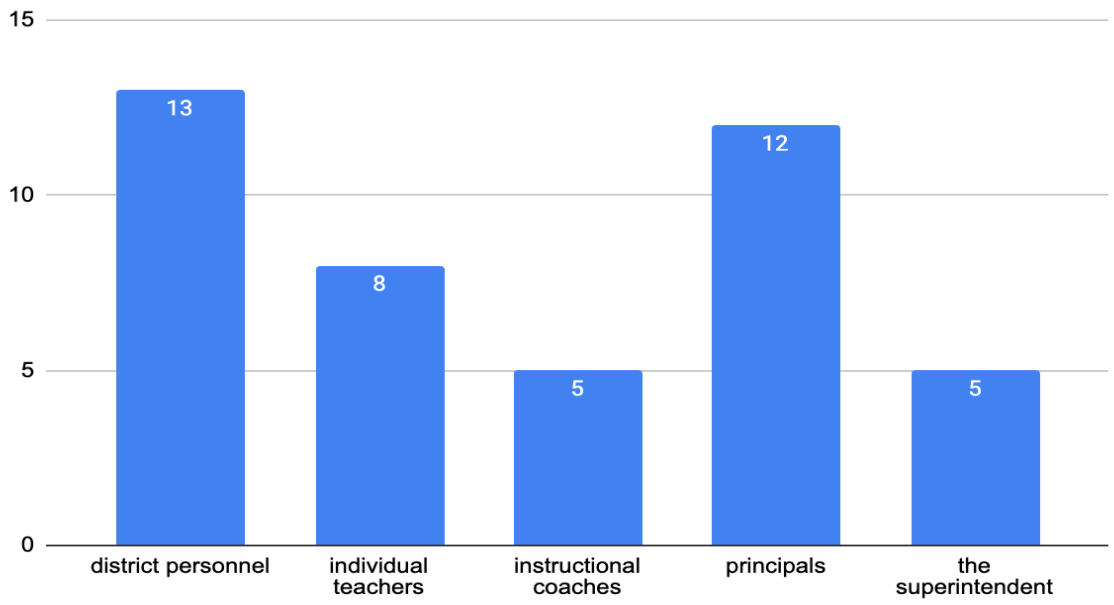


Expectations

When asked what the work expectations were for their role, 33 of 49 ICs provided a percentage for different activities. On average ICs reported spending 44.27% of their time on coaching. The range was wide, varying from 5% in one case, to 100% in several other cases. The most common answer was that ICs spend half of their time coaching. Other expected duties included teaching their own classes, administrative work, teaching PD or developing curriculum, model teaching, managing technology, working with students, and other, unspecified, duties.

Figure 5

Who is the person responsible for establishing expectations for teaching coding?



We also asked what the expectations were for teachers in their districts in regards to teaching computing. The most common expectation (about 30% of the time) was that teachers would engage students in coding weekly. One district expects about 20 hours a year, which may be similar. Surprisingly, about 10% of ICs reported that there were no specific expectations that

teachers engage students in coding. ICs indicated that "district personnel" or "principals" were most often those responsible for establishing these expectations. Only 10% of ICs reported that they set teacher expectations (see Figure 3.5). This highlights the important role that district and school administrators play in ensuring that coding is being taught by their teachers in the classroom. Despite providing support, training and guidance to other teachers, ICs do not set the policy on how often coding must be taught by these same teachers. Thus, ICs need to work closely with principals and district personnel to ensure that teachers' time is structured appropriately to be able to meet the common expectation of teaching children to code once/week.

Highs and Lows

This section seeks to hear from ICs what the most rewarding and most frustrating parts of their IC jobs are. ICs were asked to provide an open-ended answer to this question, meaning that they were free to answer the question in any way they saw fit. I used an open-ended coding scheme to classify their answers and then looked for trends across those answers.

Most Rewarding

> "[The most rewarding part of being an IC is] being able to share and teach educators and students how to use computational thinking in context. The use of the Amazon BootUp program facilitated entry points of access to advance coding. Teachers and I enjoyed the multiple sources of resources and tutorials for each project."

ICs reasons for job satisfaction were many and varied, but the above quote provides a way of seeing how these all fit together. ICs provided 18 different explanations of what is most

rewarding about their role. These fit into three main categories: teachers, students, and personal reasons.

Teacher reasons focus on supporting helping other teachers and seeing them change their practice. ICs rejoiced in seeing teacher growth, teacher confidence for coding, teachers' excitement for coding, and the "lightbulb" moments when something finally clicked. Teacher reasons for a rewarding IC experience is exemplified by the following quotes,

> "The most rewarding thing about being an ITF is changing teachers traditional way of teaching. Introducing teachers to new applications that can help with student success."
>
> "Teachers excitement and understanding has been the most rewarding part of this process. I have seen elementary teachers grow exponentially as a result of the BootUp training sessions."
>
> "Having teachers be successful in trying new strategies and curriculum."
>
> "The opportunity to positively impact more students by providing support to their teachers and speaking to stakeholders about equitable opportunities for enriching learning experiences for ALL students."

Student reasons emphasized student excitement, success and understanding. These comments demonstrated IC classroom interaction with students directly. ICs mentioned student excitement the most out of all student reasons. For example, the quote, "seeing student eyes light up when they figure out how to make the sprites do what they want," shows that some ICs work alongside students rather than just with teachers. Comments about student excitement also showed that ICs have noted when students take what they learn in their coding lessons and apply it to other aspects of their education, as exemplified by the following statement,

> "Watching the students be inspired. Seeing them apply their new knowledge to other projects that don't require on it. Having the students show me their projects that they worked on at home."

Other teachers made similar comments about students applying their coding knowledge beyond their coding projects. Consider the following quotes:

> "Seeing the students love learning and grow in their academic and social skills."

> "The students getting it and being excited about getting on different types of technology."

Personal reasons was the least common of the three main categories. These included the satisfaction of learning new things, establishing relationships or the ability to share their knowledge with others.

Successes

When talking about their successes, ICs also gave answers focused mostly on teachers and students. The overwhelming majority of successes were framed in terms of teachers. The two most common successes were comments about teacher confidence to teach coding, and teachers' implementation of coding in the classroom, including integration of coding with other subjects.

Table 4

IC's main Teacher Successes

Teacher Confidence	Teacher Implementation
I am successful in…increasing teacher confidence	Seeing one of my own teachers implement CS lessons in her class.
Festivals and playground to help teachers and students get comfortable!	Teachers are now designing integrated coding lessons.
Being able to take tech shy teachers and students and provide them with training and tools to soar.	Teachers using a new tool that I introduced them to use solemnly.
Connecting with other teachers and building confidence.	The teachers have been very willing to try using Scratch and Scratch Jr. I have seen some outstanding lessons so far.
Teachers feeling more comfortable with it in their classrooms.	When a teacher texts or emails me a strategy that we worked on together that worked for his/her class
I see teachers growing in confidence and are more willing to try	Getting teachers to transform the way they teach and integrate technology and computer science into their curriculum
Teacher willing to try new things.	Increasing teacher participation in educational technology
This is my first year and I have been working hard to change the view of coaches in the building. I've been successful in getting more buy-in from teachers and having them use the coaches.	Beginning a cohort of teachers who implement EduProtocols in their classrooms
The main success I have had as a coach is watching the teachers transition into coding experts who had doubts about teaching it.	Helping teachers implement a new literacy curriculum
The aha moments for both teachers and students. Also, seeing teachers being willing to allow students to explore and teach them and each other.	More teachers using coding as a tool for learning

The most common student-centered successes ICs noted in students was actually exposure. As one IC stated, “I’ve had success in implementing computer science/coding in 40 elementary schools.” Others mentioned coding being taught in multiple schools without providing a specific number. Student success with coding and student understanding were also mentioned by multiple ICs (though much less often than the teacher-centered successes).

Most Challenging

As with ICs’ successes and their most rewarding comments, IC feedback on what is most frustrating about their role resulted in many different contributors. However, there were two sources of frustration that stood head and shoulders above the rest: teacher attitudes and lack of time. The followings sections presents evidence for each of these individually.

Teacher Attitudes

The main source of frustration for an IC is dealing with teachers and administrators who do not buy into or understand the teaching of coding. Fully 40% of teachers mentioned something about teacher attitudes when asked about their frustrations. When discussing attitudes, ICs often suggested that resistant teachers were unwilling to move from their traditional ways of teaching. In some cases, a teacher’s attitude meant assuring them that the need for a coach did not indicate that the teacher themself was poor at their job. In other cases, it involved ICs convincing teachers that teaching coding was not just “one more thing” to add to their plate, but that it could be integrated in a way that complemented, rather than competed, with teachers’ existing responsibilities. And still in others, it involves acknowledging that not all teachers are prepared to discuss issues of equity and access the CS Education. Table 3.5 provides all the comments ICs made about their frustrations with teacher attitudes.

Table 5

IC Frustrations about Teacher Attitudes

IC Quote
● Some teachers do not try to implement the skills or strategies for coding in their own classrooms.
● The resistance or a lack of commitment from teachers can be the most frustrating aspect of being an instructional coach. This is especially true when it comes to introducing new teaching methods or approaches, which may be met with reluctance if teachers have grown accustomed to their current practices. Juggling competing demands and priorities from school administrators, teachers, and students can also be a significant source of frustration. Additionally, managing the workload of supporting multiple teachers and catering to their individual needs can be challenging, potentially leading to feelings of being overwhelmed and burnt out.
● When teachers won't get on board and therefore their kids miss out on opportunities.
● Most of the time teachers want us to push in and deliver the lessons rather than use us as actual coaches.
● The most frustrating is not having buy-in or having teachers who don't want any support and are used to traditional ways.
● Convincing other teachers to utilize it more often and that it doesn't require anything extra from them.
● Not everyone likes change, so it may take longer to implement new curriculum.
● Teacher Push Back
● Close minded people and people who complain about the coaching position.
● Teachers unwilling to add motivation to learning.
● Getting teachers to understand the importance of teaching computer science
● Struggling with educators afraid of technology or afraid of not being the experts in the room.
● When teachers don't attempt to figure out aspects of technology programs on their own
● As I mentioned previously, it is getting teachers to understand that this isn't an extra thing added to an already full plate of responsibilities.
● Resistance to change and working with people that have a fixed mindset.
● Working with teachers/admin that do not see the "CS vision" and how impactful students learning CS can be for all academic learning.

IC Quote
● The most frustrating part about being an instructional coach is trying to get everyone to realize that working with a coach doesn't mean you aren't a great teacher. It's trying to get teachers to be more reflective and realize we all have room to grow. ● Knowing that not every teacher at my schools is ready to have conversations around equity and access to CS ED and other crucial content.

Lack of Time

Lack of time is probably one of the most-commonly cited frustrations that teachers express. However, research has shown that consistent training can overcome time barriers, especially when it comes to technology-related integration (Rich, 2012). Lack of time can also be overcome at the administrative level by restructuring a teacher's schedule to account for and communicate the important of coding time during regularly weekly instruction.

Regardless of the solution, it's important to recognize that teachers feeling that they do not have the time to implement a new program are likely to not put it into action. ICs characterized lack of time in two primary ways. First, most discussed their own lack of time and competing priorities. Second, a few ICs spoke about the teachers they support and their lack of time to either work with the IC or implement what they'd learned in their own classes. Table 3.6 shares both of these types of "lack of time" frustrations.

Table 6

IC Comments about Frustrations with the Lack of Time

Quote	Person Affected
It would be nice to have more dedicated time to support others in their classrooms.	IC
Time to continue learning and practicing.	IC
Perhaps the frustrating part is trying to find time in the school's PD calendar.	IC
Time or lack of time is the most frustrating part. Teachers are spread so thin. I know they would like to commit more time to learning coding and designing integrated curriculum but unfortunately they simply do not have the extra time.	Teachers
Not enough time in the day to teach all the fun things I could.	IC
Not enough time to get to all of the teachers in my building.	IC
Not having enough time to support all of the teachers	IC
At a secondary level, getting time and space to work directly with teachers, who are often overwhelmed by other responsibilities/initiatives.	IC, Teachers
Not enough time.	IC
I am frustrated with the lack of time to support teachers.	IC
TIME and Making sure that all technology works to include internet. Having the right equipment.	IC
Fitting all of the job requirements into my daily schedule at times.	IC

What more do you wish you could do?

Rounding out this section of teaching challenges is a question about what more ICs wish they could do. In contrast to their frustrations, there was no single clear thing that ICs wish they could do more of. Their answers were almost as varied as the number of ICs. One of the more

common answers was more time; this was more time to plan with teachers, to co-teach, to train, to polish their own skills, or to collaborate around computing in some way or other. Curiously, the second-most common response was “none” or “NA,” indicating that there is a group of ICs that are satisfied with their current roles and the way they’re able to carry them out.

Conclusion

The goal of this study was to better understand the experiences of instructional coaches who support elementary coding through the BootUp program. Coaches tended to be experienced, mid-career teachers with about 3.5 years of experience in teaching coding. They support about 27 teachers at a few different schools, though this number can vary greatly. On average, they spend about 50% of their time coaching. They teach multiple subjects (3, on average) and are thus dynamic teachers that both specialize (e.g., educational technology) and generalize. Coaches find the most satisfaction in their role in helping other teachers to feel confident and catch the vision of implementing coding in the classroom. This perhaps explains why one of their greatest frustrations is the flip-side of that coin—teachers’ general resistance to change and an unwillingness to experiment with new methods, technologies, and approaches. Coaches’ time for actual coaching is most often decided by principals and district personnel, which highlights the important role that systemic structure plays on coaches’ experience. As with many teacher studies, lack of time was a common factor in their frustration. Despite these frustrations, though, coaches find joy in their role supporting other teachers to learn to teach coding. Changes in teacher practice and student excitement highlighted their reasons for this joy. Finally, instructional coaches felt most confident in their ability to help others when they felt more confident in their own ability to code. This is curious, since the coaches in this study only rated their confidence in the 6/10 range. Thus, it is important for coaches to continue to develop their knowledge of coding beyond their initial training.