Running Head: RUBI IN EDUCATIONAL SETTINGS

Supplemental Table 1. Themes and Examples by Study Phase

Theme	Study 1: Observation and Interviews	Study 2: Demonstration Study of RUBI	Study 3: Collaborative Redesign	Study 4: Demonstration Study of RUBIES
Functions of Behavior	• Teachers are taking Antecedent-Behavior-Consequence (ABC) data and looking at functions of behavior primarily for big behavioral outbursts in the classroom. • There is an understanding of a need to know functions of behavior before implementing interventions. • Educational providers already have some of this data from Functional Behavioral Assessments (FBA) and Behavior Intervention Plans (BIP), which is helpful to them.	• The desire for RUBI videos to be updated to be more school-based and provide more elaborate and advanced video examples of behaviors. • Teachers report needing more resources and support to take ABC data in the classroom. • Many general education teachers do not have training to identify the functions of behavior and could use this support.	• Emphasis on behaviors as communication vs. a personal attack on providers can help prevent burnout and increase buy-in.	• Want more information on how to take data efficiently and effectively (i.e., just circling ABCs instead of having to write them out).
Prevention	• Teachers are already using prevention strategies in the classroom. They are noticing early signs of a behavior and redirecting children to prevent large outbursts.	• Who is going to make visuals? How to address teacher anxiety that they aren't "right"? The desire for electronic or pre-made copies of visuals. • Buy-in is necessary for visuals! Teachers won't make/use them unless they know they will work and will save them time in the long run • Teachers might push back on some prevention strategies because they perceive they are letting kids off "easy" or running their whole classroom around one child.	• Visuals are for kids, not professionals; should follow the student, not stay with trained adult. • Giving choices to kids within the classroom to prevent them from engaging in disruptive behavior. • Include information about teachers shifting around their teaching schedule as a prevention strategy.	• Emphasis on difference between setting events and antecedents. • There needs to be a continuum of what visuals look like for different kids. • Empower kids to advocate for the prevention strategies they need.

Consequences	• Providers are undoubtedly using consequences in the school. • There is a huge emphasis on reinforcement vs. punishment in regard to consequences.	• Needing to plan for implementing consequences because letting kids escalate in the classroom might not be feasible.	• Consequences for visuals need to be personalized for a diverse set of kids. • Special time harder as a universal tool. – only for the kids that it's really helpful for. • Need to deal with peer reactions in regards to planned ignoring. • Addressing noncompliance with reinforcement instead of physical prompting. Physical prompting is only a last resort. • Give kids opportunities to self-correct with warnings. • Have consistently been told to reinforce and not punish because of the negative connotation of the word, but could be helpful to take away privileges at times.	• Some providers get nervous about reinforcement and think students will become dependent on it or won't be motivated intrinsically with extrinsic reinforcement.
Teaching Skills	• Providers are using some functional communication training in classrooms (e.g., break cards frequently used as functional communication tool in schools). • Teachers use a lot of modeling and peer modeling to help teach skills.	• Providers believe that adaptive skills are necessary to have a functioning and productive classroom.	• RUBI to serve as a conduit to supporting parents in a home with teaching skills. • It's equally important for teachers to be mindful of how they're communicating to the child as it is to support the child having their own tools to communicate. • Teaching gestures as a communication tool is extremely classroom friendly and many teachers are already using this skill. • Example adaptive skills to target in school include: toileting, washing hands, eating, standing in line, social skills. • Teaching skills could be a supplemental session for students who have adaptive skill Individualized Education Plan (IEP) goals. • Emphasizing to teachers that they are already doing a lot of these things – might not require a lot of fancy jargon and language.	• Teaching skills might not be applicable in every situation and could be a supplemental session. • It is essential to emphasize reinforcement in sessions focused on compliance or teaching skills.

Generalization and Maintenance	• Teachers commonly use peers to help with generalization. • Providers utilize some strategies to help behaviors generalize, but recognize more work needs to be done to help skills generalize to other classroom and home settings.	• These are excellent tools for parents. • Parents would be more willing to come to school than a clinic to learn these skills. • Sensory demands definitely should be fleshed out more [for teachers].	• General education teachers need more training on how to used planned ignoring. • How to train Gen Ed peers. • This information needs to be available for Special Ed, but also an adapted version for General Ed.	• There needs to be a team approach for intervention (including special ed, gen ed, specials, parents, and administrators) for skills to truly generalize.
School Policies	• There is an inherent school philosophy that the student-teacher relationship is the most important factor for programs to succeed. • The district is moving toward looking at behavior through a restorative and equitable lens. • There are strict school district discipline policies; the IEP process and laws guide a lot of how providers choose to implement interventions. • There is a school-wide emphasis on positive behavioral intervention strategies.	• Some district policies on not physically touching students – but depends on age. • Difference between physical assisting and restraint or physically moving a child.	• Supervisors and principal emphasize reinforcement over loss of privileges, but think a discussion of loss of privileges could happen with right angle and data. • District policy to have paraprofessionals attend mandatory competency trainings could be a good outlet for RUBI trainings.	• Desire for RUBI strategies to be normalized and accepted school-wide. • It would be feasible to give RUBI trainings through school-wide professional development time.
Barriers and Facilitators	• Desire for more training for working with kids with autism. • Teachers do not have extra time for anything.	• There is a lack of training and in-class supports for providers to manage challenging behaviors in the moment. • Providers appreciate concrete and real-world examples. • Having hands on help in the classroom is a big facilitator to taking data and implementing interventions. • It is difficult to consistently review and update intervention plans. • RUBI needs to be marketed as a tool to make teachers lives easier and prevent burnout.	• Broad psychoeducation on autism for all providers is helpful to generate understanding and encourage them to utilize skills. • It is difficult for teachers to apply skills when they have 25 kids to look after – need tips on how to apply skills in a large group.	• In Autism 101 section, want more specific information on severity levels of ASD. An Autism 101 session will help develop empathy and understanding of why behaviors are happening in providers.

Running Head: RUBI IN EDUCATIONAL SETTINGS

Implementation Decision Making	N/A	• The need to have uniform strategies but having flexibility in how they're applied. • The manual could teach basic skills and then a more advanced set of skills that you graduate to. • Finding universal language, especially for new teachers. • Need for a culturally sustaining manual and handouts that are sensitive and inclusive.	• Being able to pick and choose the most applicable components to RUBI for each child will make the intervention more utilizable and effective.	• Need to build relationship and establish rapport with students as a foundation to success – parents already have this relationship but teachers don't necessarily. • Make prevention tools accessible for all kids to reduce stigma and increase positive behaviors from all students.
Outcomes/Goals	• Important goals for providers include community building, inclusion, increasing adaptive skills, academic success, and engagement in the classroom.	• Implementing these skills can really help children be more manageable in the classroom and, in turn, empower teachers. • These tools can also be really helpful for typically developing students. • Implementing these procedures will also help children succeed academically. • Having solid interventions in place and making sure teachers can handle behaviors is really important for deciding what kind of placement a child will have.	• Emphasizing the long term impact these strategies can have – in terms of community success, inclusion, independent living, and vocation. • Lack of carryover of tools to mainstream classroom leads to child falling apart in that setting.	• Additional goals emerge of students being independent and autonomous.

Running Head: RUBI IN EDUCATIONAL SETTINGS   1

Supplemental Table 2. Theme Applications for Manual Adaptations and End User Identification

Theme	Definition	Number of Coded Text Segments	Subtheme	Text example	Application to manual adaptation/End-user Identification
Functions of Behavior	*This code relates to the collection or recording of antecedent, behavior, consequence (ABC) data, describes or identifies the function of behavior (attention, escape, avoidance).*	Phase 1: 16 Phase 2: 36 Phase 3: 0 Phase 4: 21 Total: 73	Desire for more examples of school-relevant behaviors.	"Take the videos to another level and make them really school-based…get a list from teachers of the behaviors that they're actually having challenges with."	Add behavior examples that are more relevant to the school setting; remove video vignettes that are not school-related.
Prevention	*This code relates to the use of RUBI prevention strategies, including: 1) change how you ask; 2) change order of events; 3) do things in small doses; 4) control the environment; 5) respond to early signs; 6) address setting events; and 7) visual supports.*	Phase 1: 56 Phase 2: 49 Phase 3: 60 Phase 4: 52 Total: 217	Visuals are helpful but staff don't have time to make them.	"There's just a huge barrier to who's going to make those visuals. And even if you found something online for free, people aren't sure those are the right thing to use because this is all new to them."	Provide toolkit of pre-made visuals as well as electronic copies easy access.
Consequences	*This code relates to any response to a behavior by peers or staff. The code also relates to the use of consequence strategies from RUBI, including: 1) reinforcement/ praise; 2) planned ignoring; or 3) compliance training.*	Phase 1: 67 Phase 2: 63 Phase 3: 81 Phase 4: 41 Total: 252	Difficult to broadly implement one-on-one "special time" in the school setting.	"I'm able to do [special time] three or four times a week with them and then the Ias are able to do it a few more times. But that's with just two kids…so not everyone gets a daily break."	(From Reinforcement 2) remove special time instruction, emphasize "catch the child being good. Collapse Reinforcement 1 and 2 into one Reinforcement session.
			Difficulty using planned ignoring in a large classroom setting due to safety.	"[Some providers] completely ignore and I felt horrible but I had to override [them] because that student started to throw out books and hit other kids. And I said, I'm sorry, but this is past the point of safety."	Combine Planned Ignoring and Functional Communication Training into one session with focus on using skills in concert.
Teaching Skills	*This code relates teaching new skills in line with RUBI procedures, including: 1) functional communication; 2) prompts; 4) modeling of skills; 5) chaining or task analysis to teach skills.*	Phase 1: 15 Phase 2: 26 Phase 3: 24 Phase 4: 17 Total: 82	Skill acquisition is not the primary focus for teachers, especially in higher grades.	"But [these skills] don't have to be taught as systematically to the majority of my students, it would be more for kids who do have an IEP or are struggling with some other things that way...It might be the one or two kids who need a little extra help."	Remove Teaching Skills session from core curriculum; make it a supplemental session.
Generalization and Maintenance	*This code refers to the generalization of behaviors and skills across settings (e.g., across classrooms) and people (e.g., to caregivers, other teachers, peers, etc.).*	Phase 1: 6 Phase 2: 19 Phase 3: 16 Phase 4: 42 Total: 83	For behavioral changes to maintain, skills need to be utilized across classes (including specials like PE, music, art).	"They go to PE or Music. Those teachers knew the plan. We had meetings. They knew what was expected. That is how it worked for that student to be successful."	Ensure generalization and maintenance session includes promoting generalization of procedures across classes.

2

School Policies	*This code refers to any school policies or rules that are present and/or may affect teacher/ staff's use of RUBIES.*	Phase 1: 17 Phase 2: 29 Phase 3: 31 Phase 4: 16 Total: 92	Most schools will not permit physical touch by providers, especially for older kids.	"When I watched these videos and when I read the material, that was something that I thought is kind of sticky. So I am told not to touch students."	Remove physical prompting from compliance training procedures;
			Schools emphasize reinforcement over punishment.	"You can just pull them back to the reinforcement. If the kid's not going to comply, then you obviously haven't found a reinforcement that's going to make him comply in a way."	Replace physical prompting with "when-then" (reinforcement) statements in the compliance training session.
Barriers and Facilitators	*This code refers to any barrier (e.g. lack of support, no time for training) or facilitator to program/strategy implementation.*	Phase 1: 44 Phase 2: 78 Phase 3: 33 Phase 4: 63 Total: 218	Lack of knowledge about ASD.	"I don't think a lot of the teachers have this training. They don't have knowledge about autism. They see the chair being thrown by the child as a bad child."	Add initial Autism 101 session, providing information and education on autism.
Implementation Decision Making	*This code refers to components that are necessary to align and help dictate strategy choice.*	Phase 1: 142 Phase 2: 72 Phase 3: 49 Phase 4: 110 Total: 373	Desire for more culturally inclusive materials.	"[It would be great] to see if we could have some culturally responsive pictorial representation when we talk about daily schedules and things like that."	Update materials to be more culturally sensitive and inclusive.
Outcomes/ Goals	*This code includes targeted outcomes for students and goals of strategies in use.*	Phase 1: 6 Phase 2: 5 Phase 3: 4 Phase 4: 1 Total: 16	Desire for interventions to help kids be as fully included as possible.	"We're placing these kids into pathways in kindergarten. So the decision between access and a percentage of the day in gen-ed versus a self-contained classroom falls to me and the biggest deciding factor when I talk to colleagues is behavior that can be dealt with in a classroom."	Identification of student involved in mainstreaming efforts as end user.