STEM Academy of Teachers and Leaders: 2017 Academy Evaluation

"#$%#$&#" ' ( )*+,-&!

STEM Acade f   Teache   a d Leade :
2017 Acade   E al a i

"#$%&'(!)'**(!•!+,*#-',!./$01,$!2''%'*!•!3,4#'!5*,44,#$!•!6,&&,$%*,!7,48#'-%!•"',$$'!29!3'44'*-#$:;'--'*!

<=/4>'*$!+'4>=%#&4!?$#@'*&#4(!

Fall 2017
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*   "#$%#$&#"'()*+,-&!

L23!6LA : !YB,43 ? 5!@79!6B*3+B3!L3,B2391!,+4!D3,4391!>97Z3B8!*1!,!>,9%+3912*>!O38R33+!

"#$%#$&#" ' ( )*+,-&!

Table f C e

O e ie   f he STEM Academ f Teache a d Leade P je c

L23!6LA : !YB,43 ? 5!@79!6B*3+B3!L3,B2391!,+4!D3,4391!>97Z3B8!*1!*+83+434!87!* ?>,B8!'#!>39B3+8!
7@!823! ?*44-3!1B277-!1B*3+B3!83,B2391!05!823!@7/982!53,9!7@!823!>97Z3B8!!L23!83,B239!1/>>798!@79!
823!>97Z3B8!R,1!43<3-7>34!87!*+B-/43!82933!>2,131!!
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•!   !@7B/131!7+!*+a/*95$O,134!*+189/B8*7+K!1B*3+8@*B!>97B311!18,+4,941K!83,B239!2(B)1Tf84*,*34!*+197ZBB8

Credentials and Science of the STEM Academy for Teacher

`   "#$%#$&#" ' ( )*+,-&!

@7B/134!7+!3B7-7V*B,-!1/BB311*7+!,+4!/134!USG!,1!823!>9*?,95!877-0!L3,B2391!>9313+834!823*9!
>97Z3B81!87!823*9!>3391!,+4!93B3*<34!@3340,B^!8297/V2!N,+<,10!!

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=/9*+V!823!   K!>,98*B*>,+81!1/O?*8834!,!93@-3B8*7+!<*437!,+4!
?,^391>,B3!49,R*+VK!1*?*-,9!87!823!,11*V+?3+81!8235!B7?>-3834!4/9*+V!823!>93$,B,43?5!7+-*+3!
?74/-3K!/1*+V!823!^+7R-34V3!8235!V,*+34!4/9*+V!823!6LA:!YB,43?50!L3,B2391!,-17!R,8B234!
?793!<*4371!,+4!93,4!?793!,98*B-31!82,8!93*839,834!17?3!7@!823!87>*B1!@97?!823!@,B3$87$@,B3!
,B,43?5K!*+B-/4*V!?,^391>,B31K!877-1!,+4!?,839*-1K!823!97-3!7@!823!83,B239K!,11311?3+81K!,+4!
?,^39!?*+413810!D,18-5K!83,B2391!1/O?*8834!,!438,*-34!7+3$>,V3!>-,+!@79!27R!87!*?>-3?3+8!,+!
: GS!3H>39*3+B3K!/1*+V!823*9!R79^!@97?!823*9!7R+!>9313+8,8*7+1!79!823!*+@79?,8*7+!>97<*434!
4/9*+V!823!6LA:!YB,43?50!

P jec -Ba ed Lea i g

=/9*+V!823!   K!>,98*B*>,+81!R393!*+8974/B34!87!.GD!8297/V2!
13<39,-!,98*B-31!,+4!<*4370!6>3B*@*B,--5K!8235!-3,9+34,07/8!823!I!^351!87!.GD0!"\!318,0-*12*+V!
93,-$R79-4!B7++3B8*7+1K!&\!B7++3B8*+V!87!9*V797/1!B7+83+8K!%\!189/B8/9+V!18/43+8!B7--,079,8*7+!K!J\!
@,B*-*8,8*+V!18/43+8$49<3+!-3,9+*V!,+4!I\!3?0344*+V!,11311?3+8297/V27/8!.GD!/+*810!
.,98*B*>,+81!-3,9+34,07/8!823!3113+8*,-!a/318*7+!K!R2*B2!49<31!823!/+*8!,+4!1*8*/,831!*+,+!
*+a/95!B7++3H80!Y@839!*43+8*@5+*V!2*V2-35!>9*79*85!LAm6!,+4!-3,9+*V!,07/8!823!0,1*B!189/B8/9!7@!
.GDK!83,B2391!B7--,079,834!,+4!09,*+1879?34!43,1!@79!.GD!/+*81!82,8!R393!-,839!93@*+34!,+4!
,4,>834!4/9*+V!823!@,B3$87$@,B3!6LA:!YB,43?50!!

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S+!823!   !7@!823!6LA:!YB,43?5K!83,B2391!18,9834!R*82!,!4,5!7@!>251*B1!,+4!
97B^3895!*+189/B8*7+!-34!05!=90!.,/-!m9/3V39

B7 ?>-3834!8R7!,4.*8*7+,-!,11*V+ ? 3+81!82,8!3 ?>2,1*W34!823!B/-8/93!7@!,+!*+a/*95$0,134!
B-,11977 ?0!L3,B2391!R9783!,07/8!,+4!B93,834!,B8*7+!>-,+1!,97/+4!* ?>-3 ? 3+8,8*7+!7@!17 ? 3!7@!823!
3@@3B8*<3!189,83V*3.!8,/V28!*+!823!.GD!,+4!6AD!@,B3$87$@,B3!1311*7+1@!

S cial a d E i al Lea i g

6AD!*+<7-<31!823!>97B31131!8297/V2!R2*B2!,4/-81!,+4!B2*-493+!43<3-7>!17B*,-!,+4!823 ? 78*7+,-!
B7 ?>383+B*31!*+!@*<3!,93,10!

- •! 63-@$,R,93+311 r ^+7R*+V!57/9!1893+V821!,+4!-* ? *8,8*7+1!!

- •! 63-@$?,+,V3 ? 3+8 r 03*+V!,0-3!87!18,5!*+!B7+897-!,+4!>3913<393!8297/V2!B2,--3+V31!!

- •! 67B*,-!,R,93+311 r /+43918,+4*+V!,+4 ? >,82*W*+V!R*82!782391!!

- •! d3-,8*7+12*>!1^*--1 r 03*+V!,0-3!87!R79^!*+!83, ? 1!,+4!9317-<3!B7+@-*B81!!

- •! d31>7+1*0-3!43B*1*7+$?,^*+V r ?,^*+V!382*B,-!,+4!,93!43B*1*7+1!

>798*7+!7@!823!6LA : !YB‚43 ? 5K!8235!R3+8!87!823!= ,--‚1!c77Q!L23!13B7+4!R33^!7@!823!6LA : !
YB‚43 ? 5K!83‚B2391!R3+8!87!823!L9*+*85!d*<39!Y/4/07+!N3+839Q!L23!>/9>713!7@!82313!@*3-4!
3H>39*3+B31!R‚1!87!433>3+!83‚B2391]!/+43918‚+4*+V!7@!823!>7R39!7@!*+@79 ? ,-!-3‚9+*+VK!R2*-3!‚-17!
3H>71*+V!823 ? !87!>711*0-3!@*3-4!89*>1!@79!823*9!7R+!18/43+81Q!L23!1>3B*@*B!-3‚9+*+V!V!V7,-1!R393!@79!
83‚B2391!870!

   "Q!   ; +43918‚+4!27R!*+@79 ? ‚-!-3‚9+*+V!B7+83H81!B‚+!@‚B*-*8‚83!18/43+8!-3‚9+*+V!7@!93-3<‚+8!
   LAm6Q!

   &Q! AH>-‚*+!27R!*+839318K! ? 78*<‚8*7+K!‚+4!‚!13+13!7@!*43+8*85!B‚+!03!3+2‚+B34!05!3H>71*+V!
   18/43+81!87!B7 ? ?/+*85$0,134!6LA : !B7+83H81Q!!!!

   %Q!   ; +43918‚+4!‚+4!,>>-5!‚!@9‚ ? 3R79^!B7+1*439*+V!!823!<‚-/3!7@!‚+!*+@79 ? ‚-!-3‚9+*+V!B7+83H8!
   @79!1/>>798*+V!6AD!V7‚-1Q!!!!!

L23!= ,--‚1!c77]1!82933!83+381!‚930!B7+139<‚8*7+K!‚+* ? ,-!R3-@‚93K!‚+4!34/B‚8*7+Q!L23!"#h$‚B93!W77!!!!
3 ? 0341!82*1! ? *11*7+!+!*+!3<395!‚1>3B8!7@!823*9!<‚9*7/1!-3‚9+*+V! ? 74/-31!82‚8!1>‚+!13‚9-5!B2*-4‚42774!!!!
34/B‚8*7+K!27 ? 31B277-!34/B‚8*7+K!B-‚11977 ? !>97V9‚ ? 1K!@‚ ? *-5!>97V9‚ ? 1!‚1!R3--!‚1!34/B‚8‚79!
R79^127>1Q!!

Y8!823!W77K!823!83‚B2391!O3V‚+!823*9! ? 79+*+V!R*R82!‚+!*+@8974/B8*7+!1B*3+8*@*B!Z7/9+‚-1!‚+4!
70139<34!<‚9*7/1!‚+* ? ‚-1!*+!823*9!2‚0*8‚8Q!L‚H7+7 ? *B!B-‚11*@*B‚8*7+‚-!W*+V!B-‚‚47V9‚ ? 1!R393!
/134!8297/V27!8!823!4‚5!‚1!‚!+!70139<‚8*7+K!823*9!877-!‚1!83‚B2391!93B79434!‚+* ? ‚-!R*82*+!823!
239>38‚9*/ ? K!9‚>879!3+B-71!93K!@!12!‚+4!R*-4-*@3!‚+4!B*-85!<‚9*385!7@!
LAm6!R393!B7<3934K!*+B-/4*+V!82713!7+!O*74*<391*85K!93-‚8*7+12*>1!+*!+!‚!3B715183 ? K‚+4!
3+<*97+ ? 3+8‚-B2‚+V31‚+4!*+ ? >‚B8‚1!R33!2‚0,8!‚0,8Q!Y!<‚9*385!7@!LAm6K!1/B2!‚1!13-@!7@!
LAm6K!1/B2!‚1!13-@!@B1!B2!R*,>>97>9*‚83!877-1!‚+4!/1*+V!3<43+B3!R393!>9791‚+34!‚0!+87!823!
@*3-4!3H>39*3+B3Q!!

"#$%#$&#" ' ( )*+,-&

G*7B23 ? *1895K!,+4!A+<*97+ ? 3+8,-!Y+,-51*1Ω! b 2*-3!823! ? ,Z79*85!7@!823!83,B2391!2,<3!43V9331!*+!
6LA ː !@*3-41K! ? ,+5!7@!823!83,B2391!47!+78!,+4!2,<3!43V9331!*+!A+V-*12K! . 15B27-7V5K!79! ː ,11!
N7 ? ? /+*B,8*7+K!@79!3H, ? >-3Ω!F+3$@7 /982!7@!823!83,B2391!,-17!27-4! ː ,1839]1!43V9331Ω!

L,0-3!%Ω! ː ,Z79!@79!>,98*B*>,8*+V!83,B2391]!G,B23-79]1!43V9331!

G,B23-79]1!=3V933!	1 / ? 039!7@!L3,B2391!
Y>>-*34!Y981!C!6B*3+B31!	"!
G*7B23 ? *1895!	"!
G*7-7V5!	h!
G/1*+311!Y4 ? *+*189,8*7+!	"!
A+V-*12!	"!
A+<*97+ ? 3+8,-!Y+,-51*1!	"!
S+8394*1B*>-*+,95!68/4*31!	"!
m*+31*7-7V5!	"!
ː ,11!N7 ? ? /+*B,8*7+!	"!
ː ,823 ? ,8*B1!	"!
. 15B27-7V5!	"!

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L23!83,B2391!,-17!27-4!,!<,9*385!7@!83,B2*+V!B398*@*B,8*7+1Ω!6*H!83,B2391![% 'ΩI e \!27-4!8R7!79! ? 793!
B398*@*B,8*7+1K!R2*-3!h&ΩI e !7@!823!83,B2391!27-4!,!1*+V-3!1 /0Z3B8$,93,!B398*@*B,8*7+![133!L,0-3!JΩ!!!

L,0-3!JΩ! 1 / ? 039!7@!B398*@*B,8*7+1!@79!>,98*B*>,8*+V!83,B2391!!

N398*@*B,8*7+!	1 / ? 039!7@!L3,B2391!
"!1 /0Z3B8$,93,!B398*@*B,8*7+!	"#!
&!1 /0Z3B8$,93,!B398*@*B,8*7+1!	I!
%!1 /0Z3B8$,93,!B398*@*B,8*7+1!	"!

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L23!+/ ? 039!,+4!85>31!7@!83,B2*+V!B398*@*B,8*7+1!B,+!Ω3!133+!*+!) *V /93!"Ω!L23! ? 718!B7 ? ? 7+!
B398*@*B,8*7+!*1!6B*3+B3!@79!U9,431!J$gΩ!R2*-3!823!13B7+4! ? 718!B7 ? ? 7+!B398*@*B,8*7+!*1!U3+39,-*18!
@79!U9,431!J$gΩ!Y>>97H* ? ,83-5!h`e !7@!823!83,B2391!27-4!1B*3+B3!B398*@*B,8*7+!7@!17 ? 3!^*+4K!
R2*-3!%" e !27-4!V3+39,-*18!B398*@*B,8*7+1,+4!47!+78!27-4!1B*3+B3!B398*@*B,8*7+Ω![6*+B3!17 ? 3!
83,B2391!27-4 ? 793!82,+!7+3!B398*@*B,8*7+K!82393!,93! ? 793!82,+!"h!4,8,!>7*+81!+!) *V /93!"Ω\!!!

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Ⓠ!１／？Ｏ39!,+4!85>31!7@!83,B2*+V!B39ᕯ*@*B,8*7+1!@79!>,98*B*>,8*+V!83,B2391Ⓠ!

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P e i   P fe i al De el me

L23!83,B2391!2,4!,--!>,98*B*>,834!*+!>93<*7／1!1B*3+B3!>97@311*7+,-!43<3-7> ? 3+8!,+4!>97@311*7+,-!
43<3-7> ? 3+8!7+!78239!87>*B1Ⓠ!

.9*79!87!823!6LA：!YB,43 ? 5!@79!L3,B2391!,+4!D3,4391Ⓚ!,--!83,B2391!1>3+8!8* ? 3!7+!*+$139<*B3!
34／B,8*7+!93-,834!87!1B*3+B3!B7+83+8!*+!823!>,18!53,9![133!)*V／93!&!

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◊!6B*3+B3!>97@311*7+,-!43<3-7> ? 3+8!◊5!87>*B◊!

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L3,B2391!,-17!2,4!<,9*34!-3<3-1!7@!>93<*7/1!>97@311*7+,-!43<3-7> ? 3+8!7+!6AD☒!18/43+81!R*82!
4*1,0*-*8*31☒!,+4!A+V-*12$-,+V/,V3!-3,9+391![133!L,0-3!h!,+4!)*V/93!%\◊!Y>>97H* ? ,83-5!gg e !,+4!
`J e !7@!83,B2391!2,4!-311!82,+!1*H!27/91!7@!>97@311*7+,-!43<3-7> ? 3+8!*+!823!>,18!53,9!7+!6AD!79!
18/43+81!R*82!4*1,0*-*8*31☒!931>3B8*<3-5◊!E7R3<39☒!7<39!2,-@!7@!823!83,B2391!2,4!93B3*<34!7<39!"h!
27/91!7@!>97@311*7+,-!43<3-7> ? 3+8!7+!A+V-*12$-,+V/,V3!-3,9+391◊!!

L,0-3!h◊!.97@311*7+,-!43<3-7> ? 3+8!◊5!87>*B!

| L7>*B! | | l 7+3! | D311!82,+! h!E7/91! | h$"I! E7/91! | "h$%I! E7/91! | : 793! 82,+!%I! |

"#$%#$&#" ' ( )*+,-&

"#$!L23!6LA : !YB,43 ? 5!R,1!,!<,-/ ,0-3!>97@311*7+,-!43<3-7> ? 3+8!7>>798/+*85()!
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$$\frac{}{d31>7+13! \qquad N7/+8!}$$

e !

"%$!L23!6LA : !YB,43 ? 5!433>3+34! ? 5!/+43918,+4*+V!7@0

"&$!L23!6LA：!YB，43？5!>97<*434!？3!R*82!23!877-1!S!+334!87!,>>-5!*+!？5!B-,11977？!823!>9*+B*>-31!7@0!

- ！ .97Z3B8$G，134!D3，9+*+V!
- ！ ：,^39$G，134!S+189/B8*7+!
- ！ 67B*,-!,+4!A？78*7+,-!D3，9+*+V!
- ！ U37V9,>2*B!S+@79？，8*7+!65183？1!

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u/318*7+!	6897+V-5!=*1,V933!		=*1,V933!		YV933!		6897+V-5!YV933!	
	N7/+8!	e！	N7/+8!	e！	N7/+8!	e！	N7/+8!	e！
.97Z3B8$G，134!D3，9+*+V!	#!	#e！	#!	#e！	'!	I%〇g e！	h!	Jh〇& e！
：,^39$G，134!S+189/B8*7+!	#!	#e！	#!	#e！	`!	h`〇& e！	J!	%#〇g e！
67B*,-!,+4!A？78*7+,-!D3，9+*+V!	#!	#e！	#!	#e！	%!	&%〇" e！	"#!	'h〇` e！
U37V9,>2*B!S+@79？，8*7+!65183？1!	"!	'〇' e！	"!	'〇' e！	I!	%g〇I e！	h!	Jh〇& e！

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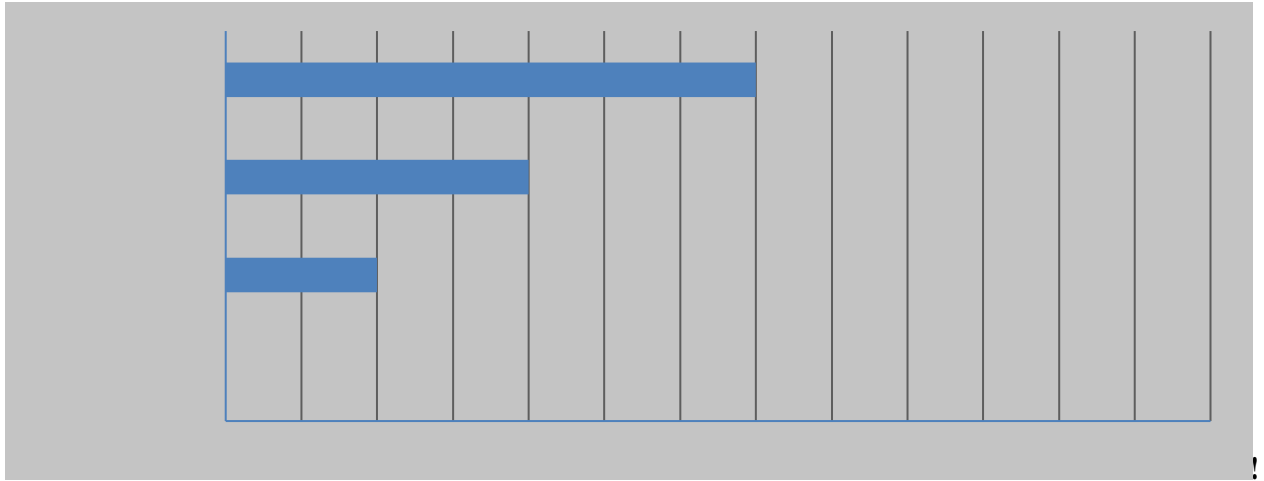" '$!L23!^+7R-34V3!S!V,*+34!,8!823!6LA : !YB,43 ? 5!R*--!23->! ? 3!* ? >97<3! ? 5!1B*3+B3!*+189/B8*7+0!
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d31>7+13!	N7/+8!	e !
6897+V-5!YV933!	g!	h"()I e !
YV933!	I!	%g()I e !
=*1,V933!	#!	# e !
6897+V-5!=*1,V933!		

" (◊!L23!B7+83+8!7@!823!6LA：!YB,43？5!？38!？5!3H>3B8,8*7+1◊!

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d31>7+13!	N7/+8!	e !
6897+V-5!YV933!	'!	I%◊` e !
YV933!	J!	%#◊g e !
=*1,V933!	&!	"I◊J e !
6897+V-5!=*1,V933!	#!	# e !

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")$! L23!189/B8/93!7@!823!6LA : !YB,43 ? 5!3+2,+B34! ? 5! /+43918,+4*+V!7@!823!1B*3+B3!B7+83+8!S! 83,B2Q!

d31>7+13!	N7/+8!	e !
6897+V-5!YV933!	h!	Jh0& e !
YV933!	J!	%#0g e !
=*1,V933!	&!	"I0J e !
6897+V-5!=*1,V933!	"!	'0' e !

**"*$!** L23! @7--7R$/>! B7, B2*+V! ,+4! 1/>>798! >-,++34! @79! 823! 1B277-! 53,9! R*--! 23->! ?3! ,>>-5! 823!
@7--7R*+V!B7+B3>81!*+! ?5!1B*3+B3!*+189/B8*7+0!
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u /318*7+!	6897+V-5! =*1,V933!	=*1,V933!	YV933!	6897+V-5!YV933!
	N7/+8! e !	N7/+8! e !		

"+$!L23!@*3-4!89*>!87!823!=,--,1!c770!
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u /318*7+!	6897+V-5! =*1,V933!		=*1,V933!		YV933!		6897+V-5!YV933!	
	N7/+8!	e !	N7/+8!	e !	N7/+8!	e !	N7/+8!	e !
.97<*434! ? 3!R*82!*43,1!7+! 27R!87!1/>>-3 ? 3+8!*+$ B-,11!-3,9+*+V!R*82!,!89*>! 87!,!B7 ? ? /+*85!O,134! 6LA : !34/B,8*7+!9317/9B3!	"!	'Q' e !	"!	'Q' e !	h!	Jh0& e !	I!	%g0I e !

"#,$!

"#%$!6>3,^391!,8!823!6LA : !YB,43 ? 5!R79^127>1!43-*<3934!2*V2$a / ,-*85!*+@79 ? ,8*7+!,07/80!
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u /318*7+!

6897+V-5!
=*1,V933!

=*1,V933!

YV933!

6897+V-5!YV933

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d31>7+13!	N7/+8!	e !
6897+V-5!YV933!	`!	h`Ɋ& e !
YV933!	J!	%#Ɋg e !
=*1,V933!	#!	# e !
6897+V-5!=*1,V933!	#!	# e !

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"#'$! b 2,8!,93,1!7@!823!6LA : !YB,43 ? 5!R393! ? 718!/13@/-!87!57/w!.-3,13!3H>-,*+Q!
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F>3+!3+434!931>7+131!*+4*B,83!82,8!83,B2391!@3-8!82,8!*+189/B8*7+!7+! : GSK!.GDK!,+4!6AD!R,1!
3H893 ? 3-5!/13@/-!87!823*9!>9,B8*B3Q! : GS!R,1! ? 3+8*7+34! ' !8* ? 31K!.GD!I!8* ? 31K!,+4!67B*,-$
A ? 78*7+,-!D3,9+*+V! ' !8* ? 31Q!L23!83,B2391!+7834!823!2,+41$7+!+,8/93!7@!*+189/B8*7+!K!,>>-*B,0*-*85!
87!823*9!7R+!B-,11977 ? 1K!,+4!a/,-*85!>9313+8391!,1!03*+V!@,B8791!82,8!* ? >,B834!823*9!931>7+13Q!
Y44*8*7+,--5K!8R7!83,B2391!+7834!823!7>>798/+*85!87!B7--,079,83!R*82!782391!,1!03*+V!/13@/-K!R2*-3!
7+3!83,B239!+7834!823!@3-4!89*>1!R393! ? 718!/13@/-Q!
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"#($! b 2*B2!,93,1!7@!823!6LA : !YB,43 ? 5!+334!* ? >97<3 ? 3+8w!.-3,13!3H>-,*+Q!!
!
F<39,--K! ? 718!7@!823!1/VV318*7+1!@79!* ? >97<3 ? 3+8!B3+83934!7+!823!<*1*81!87!823!B7 ? ? /+*85$0,134!

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A<395!83,B239![″## e T!″%f″%\!,V9334!8,8!23!6LA∶!YB,43?5!R,1!,!<,-/,0-3!>97@311*7+,-!
43<3-7>?3+8!7>>79%/+*85!,+4!82,8!823!^+7R-34V3!V,*+34!,8!823!6LA∶!YB,43?5!R7/-4!23->!823?!
*?>97<3!823*9!1B*3+B3!83,B2*+VK!R*82!′!′e![″#f″%\!,+4!h& e ![gf″%\!1897+V-5!,V933*+VK!

%%   ″#$%#$&″ ′( )*+,-&!

"#$%#$&#" ' ( )*+,-

G,997+Қ!GҚ!C!=,9-*+V\$E,. ? ? 7+4Қ!DQ![&##g\Q!L3,B2*+V!@79! ? 3,+*+V@/-!-3,9+*+V0!Y!93<*3R!7@! 9313,9B2!7+!*+a/*95\$0,134!,+4!B77>39,8*<3!-3,9+*+VQ!

Q!6,+!)9,+B*1B7Қ!NY0!_71135\$G,11Q!

G,997+Қ!GҚ!6B2R,98WҚ!=Q!DQҚ!n53Қ! 1 Q!_Қ! : 7793Қ!YҚҚ! .38971*+7Қ!YҚҚ!c3B2Қ!DQ!["``g\Q!=7*+V!R*82! /+43918,+4*+V0!D3117+1!@97 ? !9313,9B2!7+!>970-3 ? \$!,+4!>97Z3B8\$0,134!-3,9+*+VQ!

[%fJ\Қ!&'"\$%""Q!

N9711Қ!NQLQҚ!C! 1 ,8*7+,-!N-3,9+*V27/13!@79!N7 ? >9323+1*<3!6B277-!d3@79 ? Q![&##J\Q! . /88+*+V!823! >*3B31!87V382390!D3117+1!@97 ? !B7 ? >9323+1*<3!1B277-!93@79 ? !9313,9B2Q! b ,12*+V87+Қ!=N0! 1 ,8*7+,-!N-3,9+*V27/13!@79!N7 ? >9323+1*<3!6B277-!d3@79 ? Q!!

Condliffe, B., Visher, M. G., Bangser, M. R., Drohojowska, S., & Saco, L. (2016).!Project-Based Learning: A Literature ReviewQ! : =dNQ!

=7/V23985Қ!=Q![&#"&\Q!L23! ? ,^39! ? 7<3 ? 3+8Q!InnovationsҚ!7[%\Қ!""\$"JQ!

=7/V23985Қ!=Q![&#"%\Q!L23! ? ,^39! ? *+4138Q!S+! : Q!E7+35!C!=Q!m,+839![A41Q\Қ!Design, make, play: Growing the next!generation of STEM innovators![>>Q!"\$h\Q!D7+47+0!d7/8-34V3Q!!

)3+*B23-Қ! : Қ!,+4!6B2R3*+V9/039Қ!EQYQ![&#"#\Q!

Q!G7,94!7+!6B*3+B3!A4/B,8*7+Қ!N3+839!@79!A4/B,8*7+Қ!=*<*1*7+!7@! G32,<*79,-!,+4!67B*,-!6B*3+B31!,+4!A4/B,8*7+Q! b ,12*+V87+Қ!=N0!L23! 1 ,8*7+,-! YB,43 ? *31! .9311Q!

E,-<3917+Қ!AQdҚ!C!6239?4,+Қ!mQ! : Q![&#"J\Q!L23! : ,^39! : 7<3 ? 3+8!*+! Қ!gJ[J\Қ!J`IQ!

E,+Қ!6QҚ!N,>9,97Қ!dҚ!C!N,>9,97Қ! : Q : Q![&#"I\Q!E7R!6B*3+B3Қ!L3B2+7-7V5Қ!A+V*+339*+VҚ!,+4! : ,823 ? ,8*B1![6LA : \!>97Z3B8\$

689703-Қ!_72,++31ℚҚ!C!<,+!G,9+3<3-4Қ!Y+V3-,ℚ![&##`\ℚ! b 23+!*1!.GD!?793!3@@3B8*<3w!Y!?38,$
15+8231*1!7@!?38,$,+,-5131!B7 ?>,9*+V!.GD!87!B7+<3+8*7+,-!B-,11977 ?1![Y0189,B8\ℚ!
["\Қ!JJℚ!

L27 ?,1Қ!_ℚ! b ℚ![&###\ℚ!Y!93<*3R!7@!9313,9B2!7+!>97Z3B8$0,134!-3,9+*+Vℚ!

b ,-^39Қ!Yℚ!C!D3,95Қ!Eℚ![&##`\ℚ!Y!>970-3 ?$0,134!-3,9+*+V!?38,$,+,-51*10!=*@@393+B31!,B9711!
>970-3 ?!85>31Қ!* ?>-3 ?3+8,8*7+!85>31Қ!4*1B*>-*+31Қ!,+4!,11311 ?3+8!-3<3-1![Y0189,B8\ℚ!
["\0!"&$J%ℚ!

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CDE F !G?3H7 > 0!I . 4!D73?J74B 31H!K73H74BL!G?3H7 > 0!EM38 : 35=. 1!

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L7!R 2 , 8!3H83+8!47!57 / !, V933!R*82!823!@7--7R*+V!18 , 83 ? 3+81w!!

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!	6897+V-5! =*1,V933!	=*1,V933!	YV933!	6897+V-5!YV933!
"Ϙ! L23!6LA : !YB , 43 ? 5!R , 1! , !<, -/ , 0-3! >97@311*7+ , -!43<3-7> ? 3+8! 7>>798/+*85Ϙ!	!	!	!	!
&Ϙ! L23!6LA : !YB , 43 ? 5!433>3+34! ? 5! /+43918 , +4*+V!7@0! o! . 97Z3B8$Ϙ , 134!-3 , 9+*+V! o! : , ^39$Ϙ , 134!*+189/B8*7+! o! 67B*, -! , +4!3 ? 78*7+ , -! -3 , 9+*+V! o! U37V9 , >2*B!*+@79 ? , 8*7+! 15183 ? 1![US6\! o! N7 ? ? /+*85$Ϙ , 134!6LA : ! 34/B , 8*7+!9317/9B31!!	!	!	!	!
%Ϙ! L23!6LA : !YB , 43 ? 5!>97<*434! ? 3! R*82!823!877-1!S!+334!87!, >>-5!*+! ? 5! B-,11977 ? !823!>9*+B*>-31!7@Ϙ! o! . 97Z3B8$Ϙ , 134!-3 , 9+*+V! o! : , ^39$Ϙ , 134!*+189/B8*7+! o! 67B*, -! , +4!3 ? 78*7+ , -! -3 , 9+*+V! o! U37V9 , >2*B!*+@79 ? , 8*7+! 15183 ? 1![US6\!	!	!	!	!
JϘ! L23!^+7R-34V3!S!V , *+34! , 8!823! 6LA : !YB , 43 ? 5!R*--!23->! ? 3! * ? >97<3! ? 5!1B*3+B3!*+189/B8*7+Ϙ!	!	!	!	!
IϘ! L23!B7+83+8!7@!823!6LA : !YB , 43 ? 5! ? 38! ? 5!3H>3B8 , 8*7+1Ϙ!	!	!	!	!
hϘ! L23!189/B8*93!7@!823!6LA : ! YB , 43 ? 5!3+2, +B34! ? 5! /+43918 , +4*+V!7@!823!1B*3+B3!B7+83+8! S!83 , B2Ϙ!	!			

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>-,++34!@79!823!1B277-!53,9!R*--!23->!
? 3!,>>-5!823!@7--7R*+V!B7+B3>81!*+!
? 5!1B*3+B3!*+189/B8

"%◊! b 2,8!,93,1!7@!823!6LA : !YB,43 ? 5!R393! ? 718!/13@/-!87!57/w!!

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"J◊! b 2*B2!,93,1!7@!823!6LA : !YB,43 ? 5!+334!* ?>97<3 ? 3+8w!!

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"I◊!S1!82393!,+582*+V!3-13!57/!R7/-4!-*^3!87!12,93!,07/8!823!6LA : !YB,43 ? 5w!

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