

WCB RWIP Manitoba Homebuilders Association (MHBA) Final Report

Report Duration: October 31, 2018-February 28, 2019

Compiled by: Carol Paul, Project Manager, MHBA

1. MHBA acknowledges that the project is funded by WCB as per the statement provided.
"Supported by a grant from the Research and Workplace Innovation Program of the Workers Compensation Board of Manitoba"
2. **Executive Summary:** The Manitoba Homebuilders Association (MHBA) proposed the digitalization of four safety courses using virtual reality technology for use in both blended and on-line delivery of training in support of the MHBA's safety training courses. The safety programs were delivered at and in partnership with the Construction Safety Association of Manitoba (CSAM). The target group or audience included general laborers, tradespeople, new supervisors and safety trainers working in homebuilders, commercial and the heavy construction industries and transportation. It was the intention of MHBA to share these resources with the Construction Safety Association of Manitoba, Work Safely with the Manitoba Heavy Construction Association, Risk Professionally Managed, Manitoba Trucking Association, Elite Safety Services, International Brotherhood of Electrical Works, Manitoba Building Trades and other safety associations who would benefit from these interactive resources.
3. **Project Overview/Introduction: The workplace safety and health issues to be addressed include:** confined space, fall protection, scaffolding and safe use of power tools. These courses were not available using this innovative and engaging approach to teaching safety.

The blended/on line virtual reality format standardizes safety training, allows greater access to training in rural and remote locations, increases access for refresher training, improves retention through use of different teaching strategies and provides opportunity for repetition to improve retention and reduce employees time away from work for training. Virtual reality gives safety associations the means to engage our technology savvy youth. In addition, virtual reality allows participants to experience height and confined space sensations in a safe non-threatening environment before getting into a difficult and uncomfortable situation. Students are able to identify unsafe situations and know when additional training is required. Recent changes to legislation demand increased training in these areas so digitalization of the courses will ensure larger audiences receive certification. This virtual reality experience was developed by a team of experts well versed in construction safety, adult learning principles and knowledge transfer planning.

Review of Work Completed

The term of this report focused on the completion the safe use of power tools resource, the pilot of the confined space, fall protection and scaffolding resource.

In addition, facilitators guides were developed, modified and 100 copies were printed to include teacher led activities for use by teachers in the public-school system. The resources will all be available on www.tradeupmanitoba.com in the teacher's corner. See the enhanced facilitator guides sent to WCB in a hard copy; the same files will be available for download on the tradeupmanitoba.com under the link, teacher's corner. The facilitator guides cover all four safety courses. Links to the simulation/virtual reality resources:

Scaffolding Awareness:

1. <https://play.google.com/store/apps/details?id=com.bsd.scaffolding>
2. <https://itunes.apple.com/us/app/mhba-scaffolding-awareness/id1351357767?mt=8>

Fall Protection Awareness

1. <https://play.google.com/store/apps/details?id=com.BSD.FallProtection>
2. <https://itunes.apple.com/us/app/mhba-fall-protection/id1279854422>

Confined Space Awareness

1. <https://play.google.com/store/apps/details?id=com.bsd.confinedspace360>
2. <https://play.google.com/store/apps/details?id=com.bitspacedevelopment.confinedspaceandroidcardboardvr>
3. <https://itunes.apple.com/us/app/mhba-confined-space-vr/id1322438531>

Use of Power Tools

<https://bit.ly/2GY3mkn>

Power Tools VR build is included below.

https://drive.google.com/file/d/1KHSIgP3eKjb5j28_bc7fEeJO5TrAlkPr/view?usp=sharing

Advisory Committee Members:

- Lanny McInnes, MHBA
- Mike Jones, CSAM
- Brandy Dobson, Safecon Solutions
- Shawn Trudell, Safe Work
- Peter Malagus, Safe Work

November 15th MHBA Education and training Committee meeting

January 23rd MHBA Safety Committee review of the use of power tools simulation

Working Group Members:

- Ross Jardine, CSAM
- Brandy Dobson, Safecon Solutions
- Ihor Barwinsky, Gypsum Drywall
- Phil Fileccia, Qualico Homes

December 10th Review at BIT Space Development

January 8th Working group meeting to review use of power tools simulation

Dissemination Events

November 3rd: **Career and Workforce Development Month** MCSC was invited to speak on the importance of partnerships. MCSC spoke on the MHBA and WCB RWIP partnerships and the technology resources being developed in collaboration with others.

November 8th: **Manitoba Homebuilder Association Housing Forum:** The project manager, Carol Paul and BIT Space Development presented the new resources to 40 employers and had a booth to showcase them to over 200 participants. (See power point and pictures in the appendix)

January 17th **MCSC College Working Group:** Participants had a chance to learn about the new safety resources and try them out first hand.

January 18-19th The project manager went on a tour of the north visiting **University College of the North in Thompson and the Pas and meeting with the President of UCN, Doug Luvstead, the VP of Academics, Dan Smith and the VP of the Trades and Technology Centre, Rob Penner.** UCN will be provided with VR and I-pad technology from MCSC to support the dissemination of the MHBA resources in the north.

Jan 22-26th **BIT Space Development was invited to attend the career fair in the Pas and Cranberry Portage.** This provided an opportunity to pilot the resources with a variety of audiences. 350 students

January 25th 2018: **Honorable Ian Wishart, Minister of Education and Training and Lynette Plett, Senior Executive Director, Industry, Training and Employment Services, Government of Manitoba** stopped by BIT Space Development to try out the new technology. Lynette said out of all the technology tried that day, the construction resources developed for WCB RWIP, were the most engaging.

February 1-2, 2018: **Disrupted Conference: *Work is evolving and technology is the driving force....*** the resources were on display at a booth at the conference to over 450 participants. The project

manager presented to the audience of 450 about the value of technology to engage underrepresented groups in learning safety.

“... we need to create a learning environment that is engaging, applies to practice, flexible, and allows students to learn at their own pace in a safe and relaxed environment. We are responsible for addressing the education and training needs of the construction industry. We have been working with subject matter experts in the industry to evolve the way we train new and existing workers. We are eliminating death by power point and looking at ways to engage learners and measure the application of new learning at work.

Students virtually walk through construction sites to learn about the hazards on the job. The text embedded in the 360-degree images, teaches them about what they need to know as a new or returning worker. There is a facilitator guide to support the instructor. They too need to learn how to facilitate differently. A student recently said to me, you know virtual reality is just like real life. You have to look up and down and all around to identify the hazards.....Check out our booth.....”

February 8th: **Jamie Grant, Executive Director of the Northern Manitoba Sector Council and Louis Ghiz, Executive Director of New Media Manitoba** met to discuss plans for dissemination and support for facilitators who use technology to support learning.

February 28th **MHBA Safety Committee**: Confined Space and Fall Protection courses were piloted with the committee for a final review of the resources. The evaluations will be compiled and reported on in the next reporting period.

March 2nd, **CJOB, Interview on the use of technology to teach safety**, Richard Lannon

March 10th **Gods River Community** dissemination of technology to Indigenous youth

March 20th, **Open House, Construction Employment Preparation Program at 480 Portage Avenue** Eight guests from Indigenous Affairs and Northern Development Canada and First Peoples Development Inc. were introduced to the resources

March 21st: **Reconciliation Circles Conference, Manitoba Museum** booth to display the technology, 200 participants in attendance

April 3-4th, **Frontier School Division Career Days**, presentations

April 19th, **National Sector Council Meeting Presentation**

Attendees:

Bill Ferreira	Build Force Canada	Executive Director	ferreira@buildforce.ca
Warren Douglas	CLR Construction Labour Relations Association of Saskatchewan Inc.	Executive Director	wdouglas@clrs.org
Dion Malakoff	Saskatchewan Building Trades	Executive Director	dmalakoff@saskbuildingtrades.com

Robert Bronk	Ontario Construction Secretariat	Chief Executive Officer	bronk@iconstruction.com
Trent Soholt	Nova Scotia Construction Sector Council – ICI	Executive Director	tsoholt@nscsc.ca
Arlene Dunn	Canada Building Trades Union	Deputy Director	ADunn@BuildingTrades.ca

May 3rd, **MadLat Conference** Presentation to 40 participants on the use of technology in the classroom

September 12th **MHBA Safety Committee** Dissemination of Scaffolding Resource

October 12th **MHBA Advisory Committee** Dissemination of Scaffolding Resource

December 12th **MCSC Educator's Working Group** Dissemination at 1000 Waverley

WCB was to host a dissemination event on February 11th but it was cancelled.

Feb 26, 2019 A large industry, education, government event was held at Kildonan East Collegiate. The electrical students at the high school tried each of the resources as did industry safety experts, safety associations, Apprenticeship, Safe Work and high school teachers. The results of the dissemination event are available in the Appendix.

February 26th Attendees: (47 participants)

- Brent Good, HMCL
- Jill Latschislaw, MITT
- Mike Jones, CSAM
- Ray Bissonette, Safety, Nelson River
- Shelley Plett, Safety Shelly
- Shawn Trudell, Safe Work
- Rick Penner, Penn-co
- Phil McDaniel, MHCA
- KE Principal and John Henderson principal
- Teachers at KE Collegiate and students

Knowledge Transfer Plan

All resources were disseminated to Construction Safety Association of Manitoba, Work Safely with the Manitoba Heavy Construction Association, Risk Professionally Managed, Manitoba Trucking Association, International Brotherhood of Electrical Workers, Plumbers and Pipefitters Union, Boilermakers, Manitoba Building Trades, SafeCon and Safety Shelly.

In addition, MCSC plans to disseminate all these resources in the north in 2019 in a project called *Try a Trade North* in collaboration with BIT Space Development and New Media Manitoba. This is a \$260K

contribution from MCSC. Jennifer Daniels, an Indigenous Coordinator of the Try a Trades North project has been hired full time and a career awareness/technology expert will be hired in the spring to support delivery. MCSC has partnered with Frontier School Division to bring safety awareness to students, adult learners, teachers, counsellors, parents and administrators. The resources will be downloaded on their technology in each community.

The safety supplements will also be a part of school presentations, career fairs, the WCA construction expo and the MHBA Forum presented by the Community and Youth Liaison of MCSC. They will be shared at conferences, the educators working group of MCSC and the career counsellors professional learning group. The dissemination plan will carry on well beyond the length of the project. The safety resources and the three facilitators guides are available on tradeupmanitoba.com under Teacher's Corner - <http://tradeupmanitoba.com/index.php/wcb-facilitators-guides>. The fourth guide will be added upon completion of the dissemination event.

As a result of the dissemination, Penn-co Construction, the prime contractor for the northern school bundle project, will build on these resources for use in their safety training of Indigenous community members in the Wasgamack, Gods Lake, Gods River and Oxford House. This was an unforeseen impact of the project.

Appendix:

A1 Financial Report

A2 Revised Timeline

A3 Story Board Use of Power Tools

A4 Screen Shots of the resources

A5 February 26th Dissemination Results

A6 Feb 26th Dissemination event pictures

Manitoba Home Builders' Association (MHBA)
Using Technology to Improve Safety Practices for High Risk Hazards in Construction
ACCOUNTING FOR THE PERIOD ENDING February 28, 2019

FUNDING:	Actual for the Period	Actual To Date	Total Project Budget	Variance
WCB	16,500	99,000	109,900	-10,900
In Kind	0	0	96,800	-96,800
Total	16,500	82,500	206,700	-124,200
WCB EXPENDITURES:				
Salaries,Benefits/Consultancy Fees				
Project Manager	0	24,000	24,000	0
Virtual Reality Team	11,158	80,000	80,000	0
Materials and Supplies	0	600	600	0
Equipment	0	2,000	2,000	0
Knowledge Transfer	0	1,300	1,300	0
Travel, Accomodation and Meals	0	2,000	2,000	0
Expenditures funded by WCB	11,158	109,900	109,900	0
In Kind				
Specific Project Costs met by the Employer	0	0	96,800	-96,800
Expenditures funded by MHCA	0	0	96,800	-96,800
Total Expenditures	30,138	98,742	206,700	-107,958

Appendix 3: TIMETABLE OF KEY PROJECT ACTIVITIES

Specify Key Project Milestones	Start Date	Completion Date	Milestones
Year 1: Confined Space			
MHBA has an advisory committee to coordinate program activities with representatives from CSAM, RPM Trucking Safety Association, Work Safely MHCA, WCB; introduce KTP, assess current state of safety training	March 2017	February 2019	Advisory committee formed Complete
A project manager and virtual reality team are contracted for the two-year term.	March 2017	March 2017	PM and Digital team contract Complete
WCB RWIP Report	March1, 2017	March1, 2017	Report Complete
MHBA validates objectives for the confined space course with the advisory committee	March 2017	March 2017	Learning objectives confirmed for confined space Complete
KTP- interview employers and knowledge users to assess current state of safety training	March 2017	March 2017	Feedback from industry on current state Complete
Revise content to suit digital platform	March 2017	March 2017	Confined space content Complete
Develop digital technology resources	April 2017	June 2017	Digital technology resource Complete
WCB RWIP Report	June 30, 2017	June 30, 2017	Report

			Complete
Digital technology draft is reviewed by the committee and revisions are made	July 2017	July 2017	Revised Digital Technology resource Complete
Digital technology is piloted with 3 companies; KTP performance feedback and surveys	August 2017	August 2017	Industry feedback on future state Complete
Digital technology is revised based on feedback	August 2017	August 2017	Final Confined Space course Complete
Digital technology is disseminated	September 2017	September 2017	KTP Complete
Year 1: Fall Protection			
MHBA validates objectives for the fall protection course with the advisory committee	August 2017	August 2017	Learning objectives for fall protection Complete
KTP- interview employers and knowledge users to assess current state of safety training	August 2017	August 2017	Feedback from industry on current state Complete
Revise content to suit digital platform	August 2017	August 2017	Confined space content Complete
Develop digital technology resources	September 2017	November 2017	Digital technology resource Complete
WCB RWIP Report	October 27, 2017	October 27, 2017	Report

			Complete
Digital technology draft is reviewed by the committee and revisions are made	December 2017	December 2017	Revised Digital technology resource Complete
Digital technology is piloted with 3 companies; KTP performance feedback and surveys	January 2018	January 2018	Feedback from industry on future state Complete
Digital technology is revised based on feedback	February 2018	February 2018	Final Fall Protection course Complete
WCB RWIP Report	Feb 28, 2018	Feb 28, 2018	Report Complete
Digital technology is disseminated	March 2018	March 2018	KTP Complete
Year 2: Scaffolding			
MHBA validates objectives for the scaffolding course with the advisory committee	March 2018	March 2018	Learning objectives confirmed for scaffolding Complete
KTP- interview employers and knowledge users to assess current state of safety training	March 2018	March 2018	Feedback from industry on current state Complete
Revise content to suit digital platform	March 2018	March 2018	Scaffolding content Complete
Develop digital technology resources	April 2018	June 2018	Digital technology resource

			Complete
WCB RWIP Report	June 30, 2018	June 30, 2018	Report Complete
Digital technology draft is reviewed by the committee and revisions are made	July 2018	July 2018	Revised digital technology resource Complete
Digital technology is piloted with 3 companies; KTP performance feedback and surveys	August 2018	August 2018	Industry feedback on future state Complete
Digital technology is revised based on feedback	August 2018	August 2018	Final Scaffolding course Complete
Digital technology is disseminated	September 2018	September 2018	KTP Complete
Year 2: Use of Power Tools			
MHBA validates objectives for the use of power tools course with the advisory committee	August 2018	August 2018	Learning objectives for use of power tools Complete
KTP- interview employers and knowledge users to assess current state of safety training	August 2018	August 2018	Feedback from industry on current state Complete
Revise content to suit digital platform	August 2018	August 2018	Use of power tools content Complete
Develop digital technology resources	September 2018	November 2018	Digital technology resource

WCB RWIP Report	October 31, 2018	October 31, 2018	Report Complete
Digital technology draft is reviewed by the committee and revisions are made	December 2018	December 2018	Revised Digital technology resource Complete
Digital technology is piloted with 3 companies; KTP performance feedback and surveys	January 2019	January 2019	Feedback from industry on future state Complete
Digital technology is revised based on feedback	January 2019	January 2019	Final use of power tools course Complete
Digital technology is disseminated	February 2019	February 2019	KTP Complete
WCB RWIP Final Report	Feb 28, 2019	Feb 28, 2019	Final Report Complete

Project Title	Use of Powertools
Project Start	Jun-18
Project End	Jan-19
Dev Team:	Dan Blair, James Owen, Dan Voth
Purpose:	Allowing people to experience power tools in a VR
Notes:	
Contact:	

These are tools generally used for framers

There are plumbing, electrical, concrete power tools etc. We need to keep it relevant to new entrants and within budget.

Look at the procedure with and without the guard.

Ross has loads of materials at home that he will go through.

Ross will ask if CSAM has a safe work procedure for each of these tools. Check the manufacturers handbook.

Carol will develop teacher led activities for this simulation.

Task specific PPE: respirator, safety glasses

1. Choose tools (6)
2. Choose PPE
3. Proper use of tool
4. Instructor explains safe use of this tool. These are the common hazards associated with that tool.
5. Teacher guide with content and teacher led activities that support use of this simulation.
6. Earn badges?

Project: Use of Power Tools: description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Circular Saw

PPE: Safety Glasses, Hearing Protection (foam plugs)

Safety Concern Kick back, Projectiles-material or blade break up, MSI, Hearing loss

Content	Type	Description	Script	Intended learning object	Notes	Done
	Hazard	injury from the saw: entanglement, projectiles, hearing loss	A Circular saw can cause injury from entanglement, projectiles coming off the blade, hearing loss and the saw kicking back at the workers			
1	Procedure: don ppe	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.			
2	Procedure	Ensure you are wearing the correct PPE before operation of the tool.	Ensure you are wearing the correct PPE before operation of the tool.			
1	Procedure: inspect the saw	Make sure saw is unplugged or remove the battery	Inspect the saw to make sure that it is safe to use. Disconnect the saw from power sources to eliminate the hazard of the saw starting up unexpectedly			
2	Procedure	Before using a saw, inspect the blade to make sure there are no damaged or missing teeth and it is not warped. Make sure teeth are facing the correct direction.	Before using a saw, inspect the blade to make sure there are no damaged or missing teeth and it is not warped. Make sure teeth are facing the correct direction. Test the blade retention nut or bolt and tighten it up if necessary.			
3	Procedure	Before using inspect the cord if it is corded,	Inspect the cord for cracks and exposed wires; Repair the plug if it is missing the ground prong unless it is double insulated.			
4	Procedure	Test the guard before operating the machine.	Ensure that the guard is functioning and baseplate is tight and secure.			
5	Hazard	Material being cut comes loose and strikes operator or others; saw kicks back and cuts workers due to loose material	Loose or poorly supported material can be shot out at the operator or nearby workers. It will also cause the saw blade to bind and kick the saw back at the operator causing severe and deep cuts. Do not balance a 2x4 on your foot with your hand at the other end.			
6	procedure	Place and secure the material on a solid surface; hold the saw with both hands, place the saw on the material at the spot you want to cut, turn on the saw Allow the blade to hit full RPM before making contact with the material being cut.	Place and secure the material on a solid surface; hold the saw with both hands, place the saw on the material at the spot you want to cut, turn on the saw and allow the blade to hit full RPM before making contact with the material being cut. Make sure that the off-cut material can fall away from the blade and not cause a kick back.			
7	procedure	Cut the material	Push the saw along the cut line: it helps to also pull the saw along with the forward hand while pushing. This will help the saw travel in a straight line, reducing the chance of the saw stalling and kicking back.			
8	procedure	Power off the saw once the material falls away	Release the trigger switch once the material falls away, and make sure that the guard springs back to cover the blade because it will still be spinning.			

Special Notes:

1. Whatever piece of wood you are cutting falls to the right
2. Do not throw out the manual when you buy
3. Download Dewalt PDF for facilitator guide

Review: <https://www.turbosquid.com/3d-models/obj-generic-circular-saw/509298>

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Hammer Drill

PPE: Safety Glasses, Hearing Protection, Anti-vibration gloves, Respiratory protection

Safety Concern Vibration, repeated use, MSI, dust particles

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught. A hammer drill can cause injury from entanglement, projectiles from chipped material, hearing loss and the drill kicking back at the workers. If it is concrete poured before 1980, there is a good chance that it may contain asbestos, and along with the silica dust generated by the drill, this means wear a respirator to protect your lungs. Let others in the area know of the hazard			
1	Procedure/control: don PPE	Ensure you are wearing the correct PPE before operation of the tool.				
2	Procedure	Ensure the tool is disconnected from the power source before inspection and installing the drill bit.	Ensure the tool is disconnected from the power source before inspection and installing the drill bit.			
3	Procedure	Inspect the body of the drill and the chuck (head) of the drill to ensure there are no cracks or obvious signs of damage. Inspect the power cord if corded	Inspect the cord for cracks and exposed wires; Repair the plug if it is missing the ground prong unless it is double insulated. If powered by a battery, make sure that it is charge and its housing is not cracked.			
4	Procedure	Select the bit you will be using, inspect the bit to look for signs of cracks or damage. Install the drill bit, mark out how deep to drill	Select the bit you will be using, inspect the bit to look for signs of cracks or damage. If there are signs of damage or cracks, discard the bit			
5	Procedure	Plug in the drill, or connect the battery, and squeeze the drill to ensure it is operating.	Plug in the drill and squeeze the drill to ensure it is operating. The hammer part of the drill will be silent until you start pushing on the drill.			
6	Procedure	Perform the drilling task. Push straight onto the drill, making an effort to not bend the drill bit.	Perform the drilling task. Push straight onto the drill, making an effort to not bend the drill bit. Keep the hands clear of the spinning drill chuck as gloves will get snagged on the chuck tearing off skin and fingers. If the drill starts to slow down, back off the pressure.			
7	Procedure	When the right depth has been reached pull out the drill bit.	When the right depth has been reached pull out the drill bit.			
8	Procedure	Clean up the dust.	Clean up the dust, sweep up or use a vacuum.			

Special Notes:

3. Download Dewalt PDF for facilitator guide

2. Do not throw out the manual when you buy

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Drill
PPE: Safety Glasses

Safety Concern Debris in eyes, Kick back, MSI

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught. A drill can cause injury from entanglement, projectiles from chipped material, hearing loss and the drill kicking back at the workers.	Hazard identification and controls		
1	Procedure	Ensure you are wearing the correct PPE before operation of the tool.				
2	Procedure	Ensure the tool is unpowered before inspection.	Ensure the tool is disconnected from the power source before inspection and installing the drill bit.			
3	Procedure	Inspect the body of the drill and the chuck (head) of the drill to ensure there are no cracks or obvious signs of damage.	Inspect the cord for cracks and exposed wires; Repair the plug if it is missing the ground prong unless it is double insulated. If powered by a battery, make sure that it is charge and its housing is not cracked.			
4	Procedure	Select the bit you will be using, inspect the bit to look for signs of cracks or damage. If there are signs of damage or cracks, discard the bit. Now insert the correct bit into the drill chuck and tighten it up while it is still diconnected from power.	Select the bit you will be using, inspect the bit to look for signs of cracks or damage. If there are signs of damage or cracks, discard the bit. Now insert the correct bit into the drill chuck and tighten it up while it is still diconnected from power.			
5	Procedure	Plug the drill back in, or connect the battery.	Connect the drill to power supply and squeeze trigger switch to ensure it is operating.			
6	Procedure	Perform the drilling task.	Perform the drilling task. Push straight onto the drill, making an effort to not bend the drill bit. Keep the hands clear of the spinning drill chuck as gloves will get snagged on the chuck tearing off skin and fingers. If the drill starts to slow down, back off the pressure. If the drill bit is to pass through the material make sure that the exit is clear of anything you don't want damaged.			
7	Procedure	Clean up				

Special Notes:

3. Download Dewalt PDF for facilitator guide
2. Do not throw out the manual when you buy

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Cordless Nailer

PPE: Safety glasses, hearing protection

Safety Concern keep hands out of the line of fire, can hit a knot that can totally change the direction of the nail.

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	Holding your hand too close to where you are working can cause an incident.	Nails can be redirected or deflected from inside the material. Keep body parts clear of potential exit points.			
2	Hazard	The position of the nail gun is important!	Nail gun must be perpendicular to the material being fastened: if not, the nail will deflect or bend creating a hazard.			
1	Procedure	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	loose clothing , hanging jewelry, or long hair will get in the way and get snagged.			
2	Procedure	Ensure you are wearing the correct PPE before operation of the tool.	Don you PPE			
3	Procedure	Ensure the tool is unpowered before inspection. Remove the battery, power cell or air supply	Ensure the tool is unpowered before inspection. Remove the battery, power cell or air supply			
4	Procedure	Make sure your power cell is charged or has fuel in it.	Make sure your power cell is charged or has fuel in it. A weak power source will not drive the nail deep enough, or damage the material.			
5	Procedure	Inspect the nail magazine to ensure it is clean of dirt, mud, and that the nail cartidges slides in and out easily without force.	Inspect the nail magazine to ensure it is clean of dirt, mud, and that the nail cartidges slides in and out easily without force. Make sure the nails are the right length and guage.			
6	Procedure	Press the head against the surface you wish to nail to ensure you have free movement of the firing mechanism. Ensure it is clear of debris and mud.	Press the head against the surface you wish to nail to ensure you have free movement of the firing mechanism. Ensure it is clear of debris and mud.			
7	Procedure	Power up the tool.	Power up the tool.			
8	Procedure	Commence work ensuring that your free hand is out of the line of fire and you are not nailing directly into knots in wood.	Commence work ensuring that your free hand is out of the line of fire and you are not nailing directly into knots in wood. Press down on the nailer to disengage the trigger safety.			

Special Notes:

2. Do not throw out the manual when you buy

Nailers with fully charged fuel cells and full battery can fire the nails deeper which can potentially shoot through the wood and punture your hand.

Air nailers are powered by nitrogen cannisters

Knots can change the direction of the nail

3. Download Dewalt PDF for facilitator guide

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Table Saw
PPE: Safety Glasses, Hearing Protection

Safety Concern Amputation, Kickback and particles thrown

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught. A table saw can cause injury from entanglement in the blade or motor, projectiles from chipped material, hearing loss and the material kicking back at the workers. Saw dust is a hazard: this means wear a respirator to protect your lungs. Let others in the area know of the hazard			
	Hazard	Material twisting and binding against blade, causing material kick back, Make sure splitter is in place and material is in contact with rip fence	Material twisting and binding against blade, causing material kick back, Make sure splittier is in place and material is in contact with rip fence.			
	Hazard	Hand and fingers passing over the blade	Keep th e hands and fingers away from the blade: amputation will result. Do not rip a 2x4 by pushing the lumber through the saw with your hand. Use a push stick to keep your hand away from the saw blade.			
1	Procedure	Unplug the saw from power and inspect the machine	Inspect the saw to make sure that it is safe to use. Disconnect the saw from power sources to eliminate the hazard of the saw starting up unexpectedly. Blade guard should be functioning, splitter and base plate are secure, rip fence is functioning and in correct position for the cut			
2		Select, inspect and install the correct blade	Select the correct blade for the material, inspect the blade to make sure there are no damaged or missing teeth and it is not warped. Make sure teeth are facing the correct direction. Test the blade retention nut or bolt and tighten it up if necessary.			
3	Procedure	Don PPE, ensure the the power switch is turned off, THEN plug in the saw	Put on your eye or face protection and hearing protection,ensure that the power switch is turned off, THEN plug in the saw			
4	Procedure	Get the material into position, turn on the saw	Get the material into position, turn on the saw			
5	Procedure	Push the material against the rip fence and then slide the material over the balde until the cut is complete	Push the material against the rip fence and then slide the material over the balde until the cut is complete. If the material is narrow, use a push stick. Turn off the saw to clear away any scrap material.			

Special Notes:

3. Download Dewalt PDF for facilitator guide
2. Do not throw out the manual when you buy

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Chop Saw

PPE: Safety Glasses, Hearing Protection, Respirator (Siding work)

Kick back, amputation, debris blown into face and eyes, sparks

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	Amputation: keep hands away from the blade.	Amputation: keep hands away from the blade. Keep your eyes on the blade as you operate the saw.			
	Hazard	Be aware! Particles may be thrown from the saw.	Particles may be thrown from the saw. Wear a respirator for concrete siding and always safety glasses			
	Hazard	Sparks created by cutting steel may start a fire	Sparks created by cutting through steel may start a fire, make sure nails are pulled or if cutting steel materials have a fire extinguisher ready			
	Hazard	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Entanglement in the saw will cause a significant injury			
1	Procedure	Ensure you are wearing the correct PPE before operation of the tool.	Ensure you are wearing the correct PPE before operation of the tool.			
2	Procedure	Ensure the tool is disconnected from power before inspection.	Ensure the tool is disconnected from power before inspection: unplug or remove the battery			
3	Procedure	Select, inspect and install the correct blade. blade to make sure there are no damaged or missing teeth and it is not warped.	Select, inspect and install the correct blade to make sure there are no damaged or missing teeth and it is not warped. Make sure the retention nut is tight and the teeth are facing the right direction.			
4	Procedure	Test the guard before operating the machine.	Test the guard before operating the machine. It should retract as the blade contacts the material and cover the blade when the blade goes back up. If it doesn't, fix it before using it.			
5	Procedure	Make sure the stock is flat and level on the cutting table, press the material against the fence and secure with a clamp if necessary.	Make sure the stock is flat and level on the cutting table, press the material against the fence and secure with a clamp if necessary. Support the ends of the material so the loose material does not kick away from the spinning blade.			
6	Procedure	Connect the saw to power and start the saw to make the cut, pull the blade down and through the material.	Connect the saw to power and start the saw to make the cut. Allow the blade to hit full RPM before making contact with the material being cut. Pull the blade down and through the material. If the saw slows down use less pressure on the blade.			
7	Hazard	Release the trigger switch and let the blade stop before clearing away debris.	Release the trigger switch and let the blade stop before clearing away debris.			

Special Notes:

3. Download Dewalt PDF for facilitator guide
2. Do not throw out the manual when you buy

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date:	Nov-18
------------------	--------

Tool: Concrete Saw (gas quickie saw)

PPE: Safety Glasses, Hearing Protection, Face Shield, Respirator

Safety Concern	Amputate Limbs, MSI, Respirable Silica Dust
----------------	---

[illegible]

Special Notes:

3. Download Dewalt PDF for facilitator guide
2. Do not throw out the manual when you buy

Project: Use of Power Tools description & cript by Ihor Barwinsky, Dec. 18, 2018

Production Date: Nov-18

Tool: Grinders
PPE: Over the ear hearing protection, safety glasses, face shield, gloves

Safety Concern Kick back, blade breaking up and striking body, fire

Content	Type	Description	Script	Intended learning object	Notes	Done
1	Hazard	This is one of the most dangerous tools but doesn't get a lot of attention.	This is one of the most dangerous tools but doesn't get a lot of attention.			
	Hazard	Do not set it down because it runs up to 15,000 RPM.	Do not set it down because it runs up to 15,000 RPM.			
	Hazard	A disc can explode if used incorrectly and injure the worker or others nearby.	Blade must be guarded, use a disc that is rated for a higher rpm than the rating of the grinder.			
	Hazard	Severe cuts to the operator from one handed operation	Always use two hands with one on the trigger and the other on the handle. The handle is not an option.			
	Hazard	Make sure you are not wearing any loose clothing or jewelry. Tie back long hair so it does not get caught.	Entanglement in the tool will cause injury.			
1	Procedure	Ensure you are wearing the correct PPE before operation of the tool.	Ensure you are wearing the correct PPE before operation of the tool.			
2	Procedure	Ensure the tool is unpowered before inspection.	Ensure the tool is unpowered before inspection.			
3	Procedure	Ensure the guards are in place and not damaged. If there is damage, do not operate the tool until a new guard is installed.	Ensure the guards are in place and not damaged. If there is damage, do not operate the tool until a new guard is installed.			
4	Procedure	Ensure you are using the correct disk for the job at hand. (sanding, cutting, grinding, masonry)	Select and inspect he blade for cracks, wear, and speed or rpm rating.			
5	Procedure	Make sure that ON witch is not engaged, THEN connect the grinder to power.	Make sure that ON witch is not engaged, THEN connect the grinder to power.			
6	Procedure	Secure the material that is being ground or cut.	Secure the material that is being ground or cut. If it is light and loose it will be shot away causing significant injury or damage.			
7	Procedure	With both hands on the grinder turn on the grinder and start grinding: pay attention to the direction of spin and sparks.	With both hands on the grinder turn on the grinder and start grinding: pay attention to the direction of spin and sparks. Do not force the disk. Allow the tool to do the work for you. Otherwise the blade my break up. One handed operation is not strong enough to keep the grinder from spinning out of the operator's hand. It will happen!			
8	Procedure	When finished, let the blade come to a complete stop before setting it down.	When finished, let the blade come to a complete stop before setting it down. If sparks were created, begin a fire watch.			

Special Notes:

2. Do not throw out the manual when you buy
2 hands on tool at all times, can not be operated with one hand.

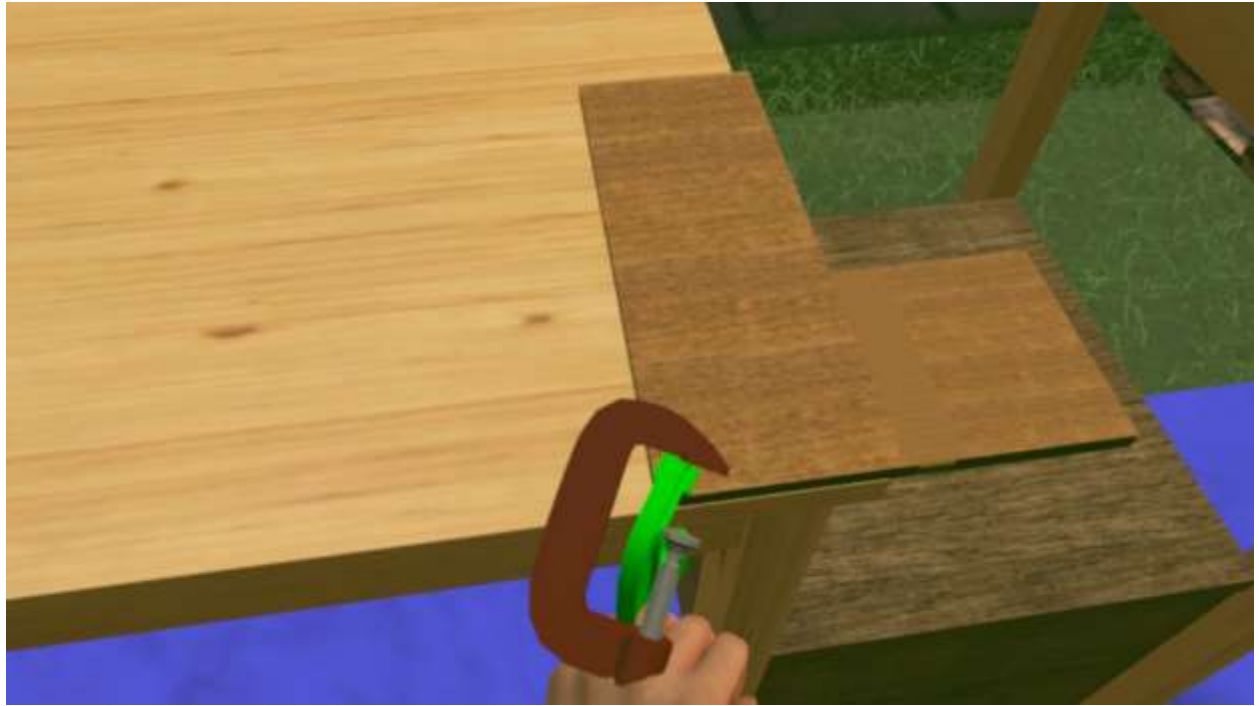
3. Download Dewalt PDF for facilitator guide

Power Tools RWIP Content

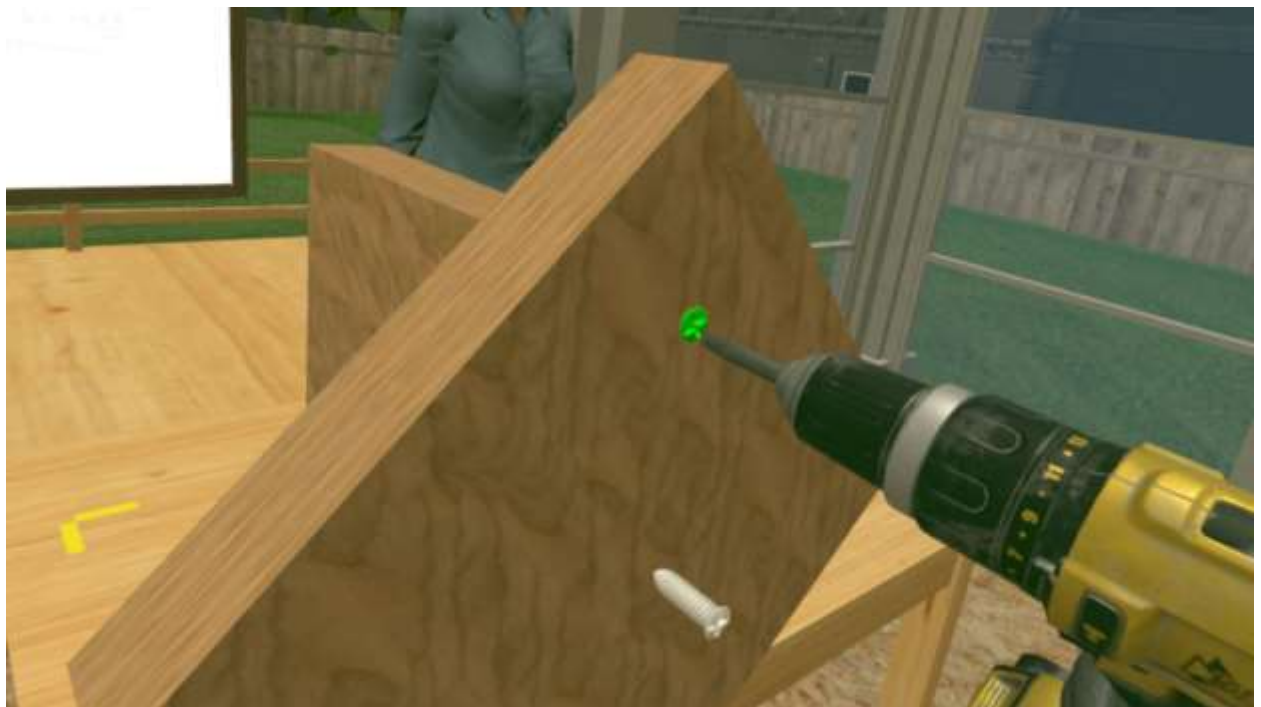
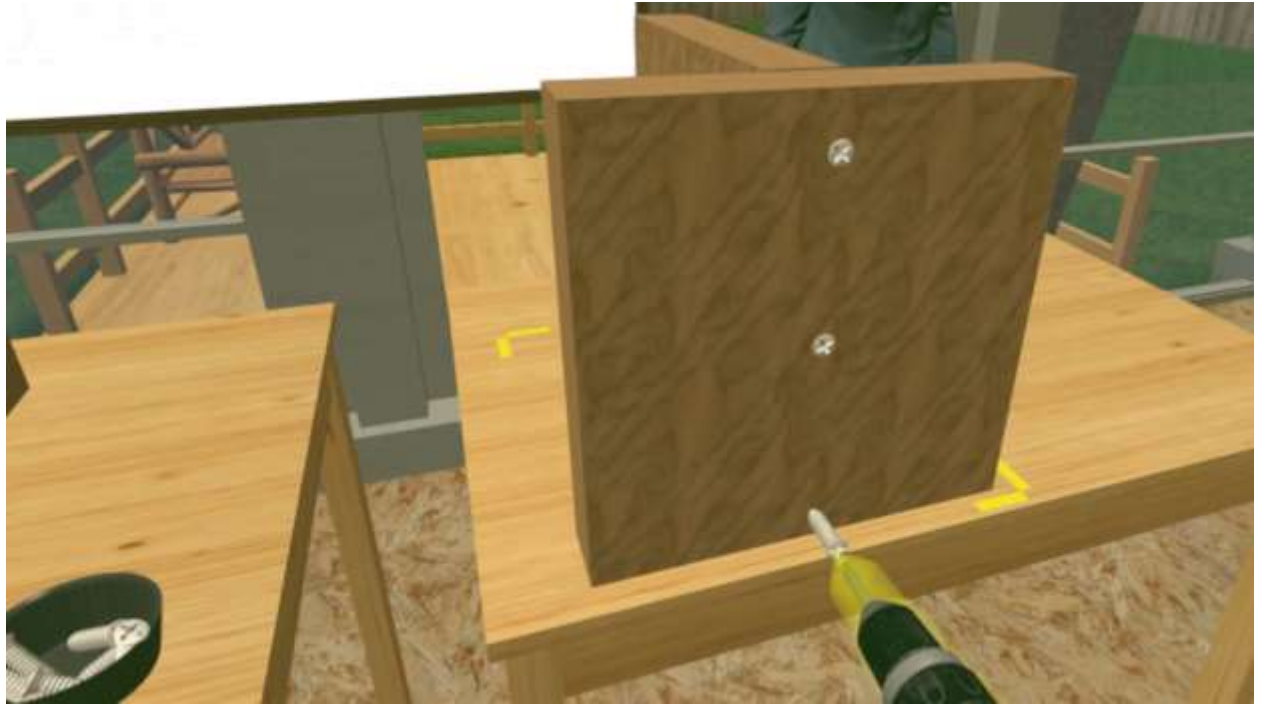




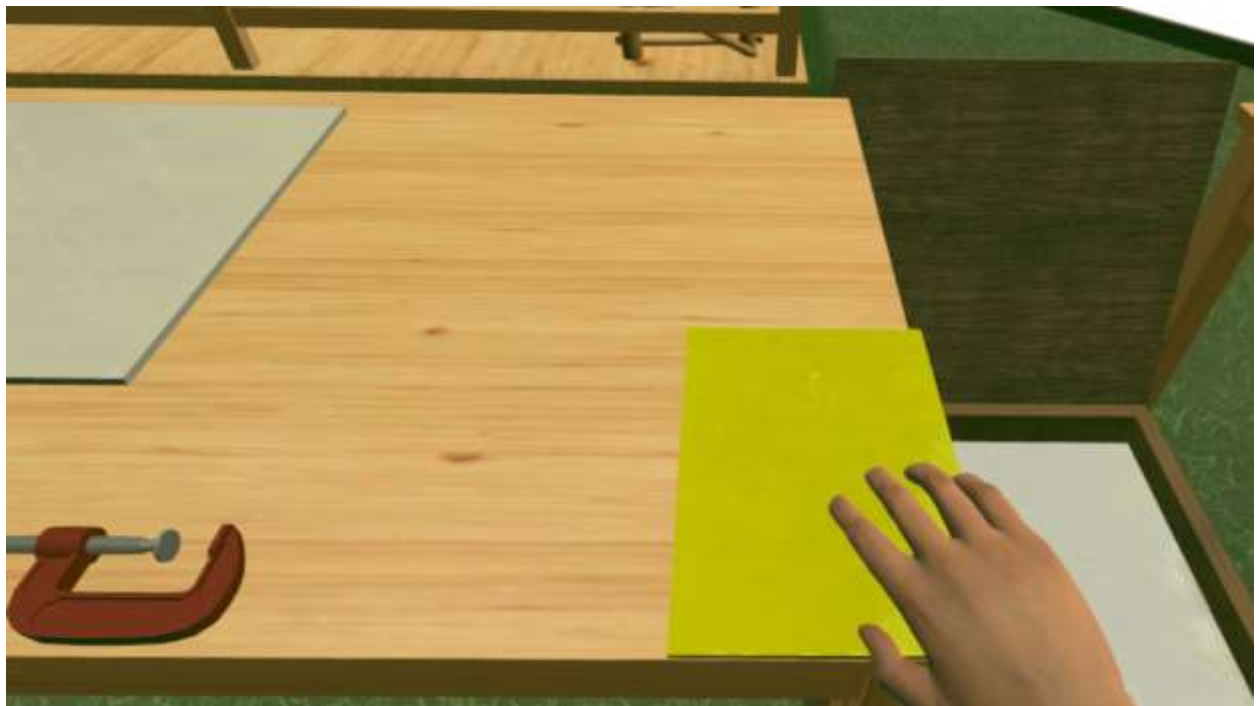


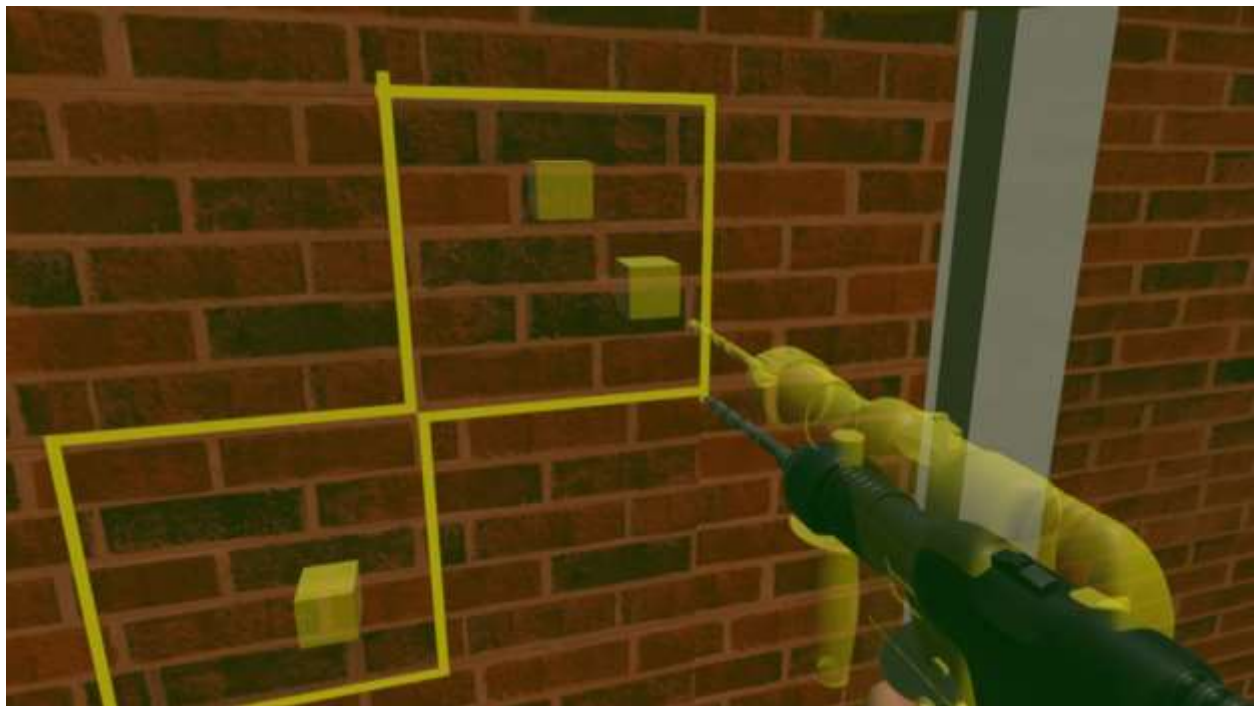
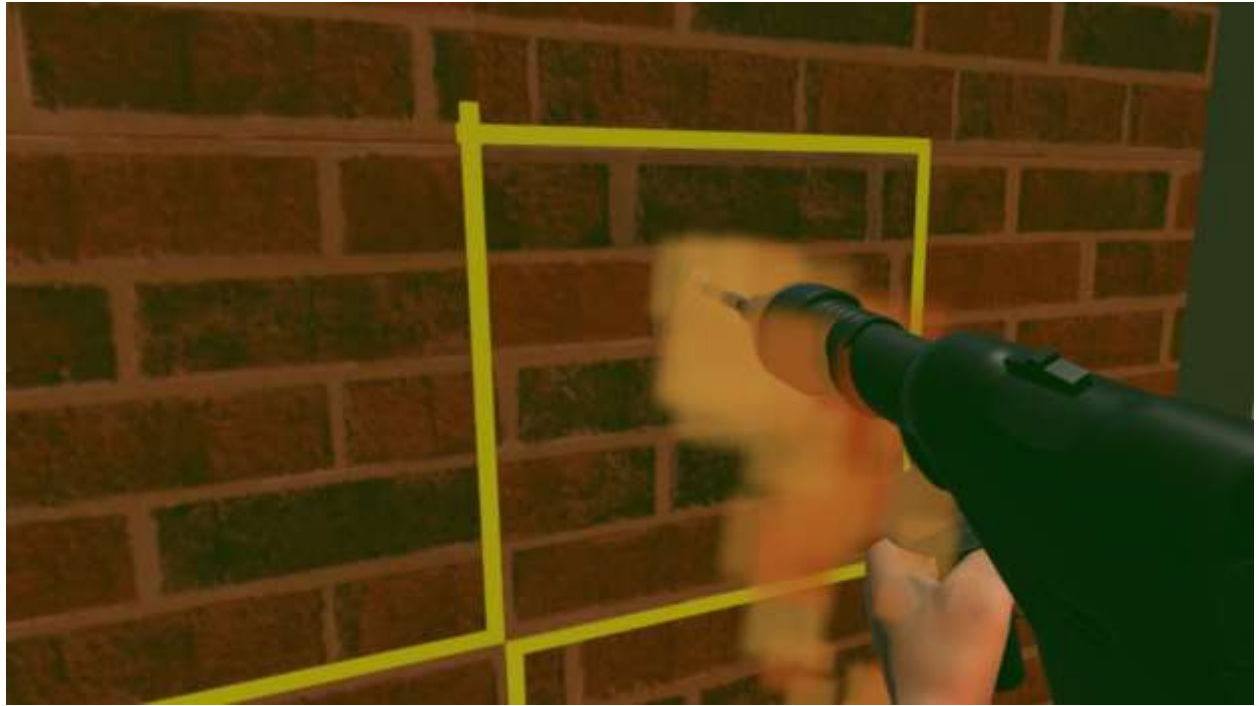








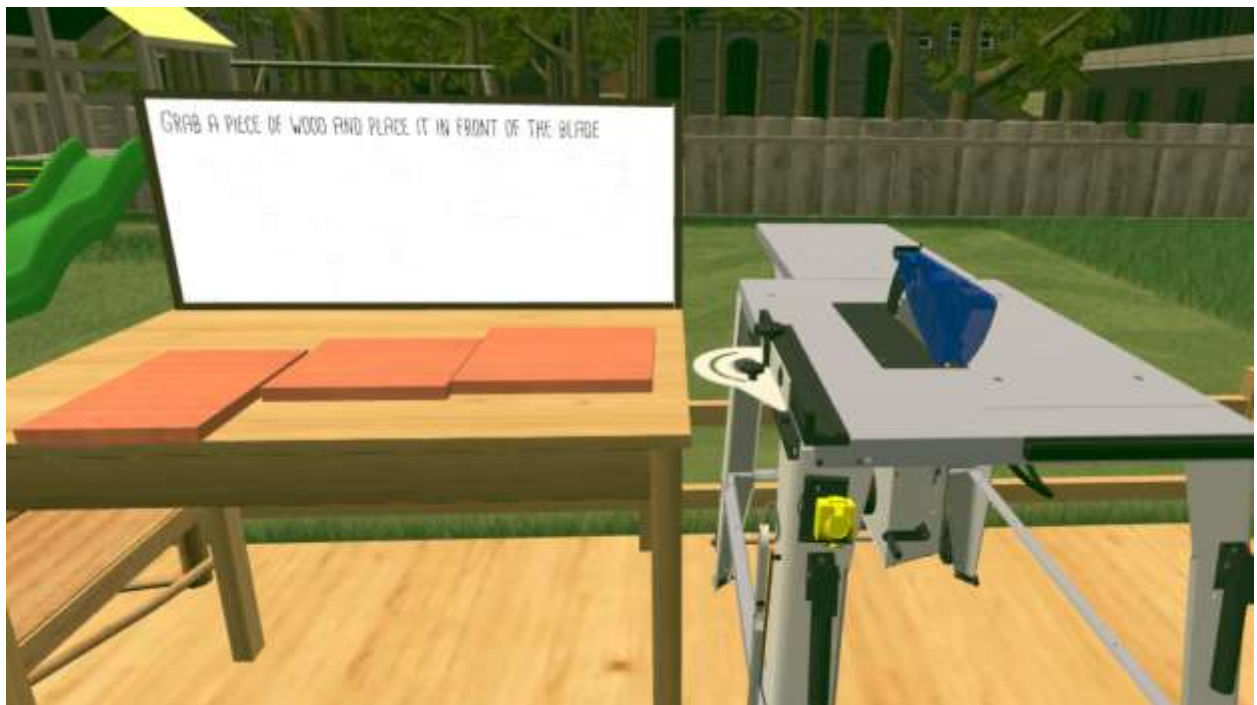
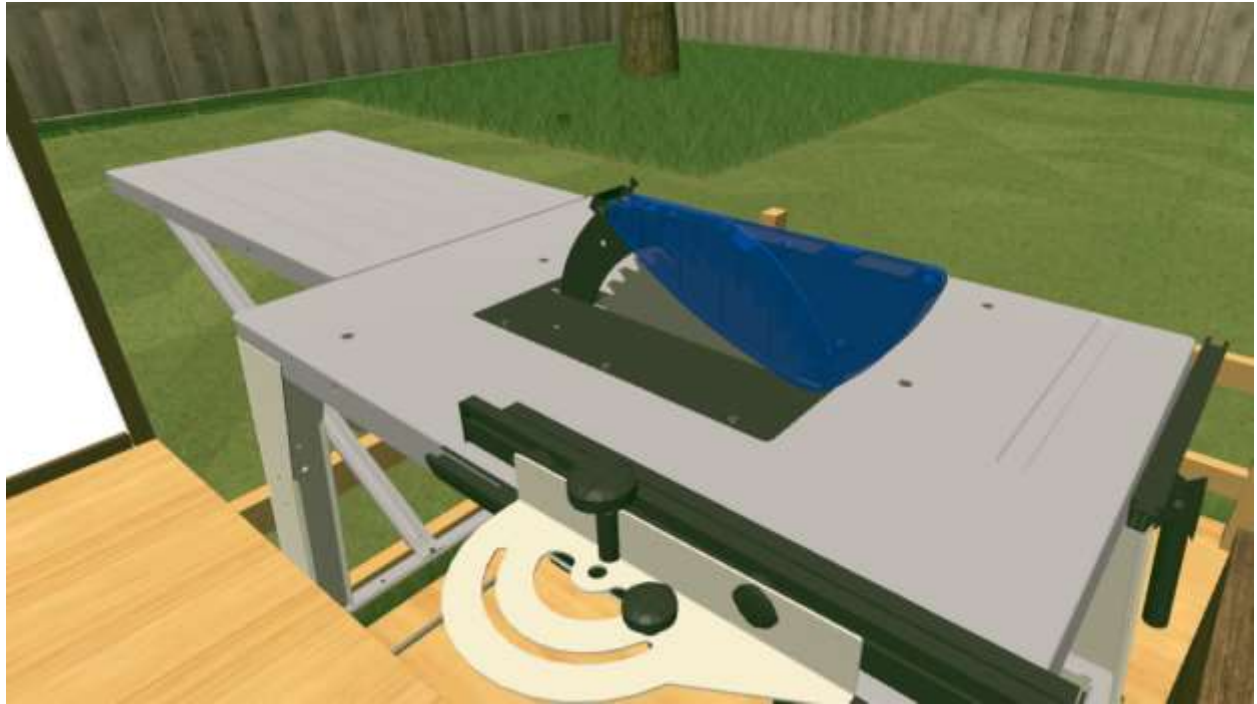


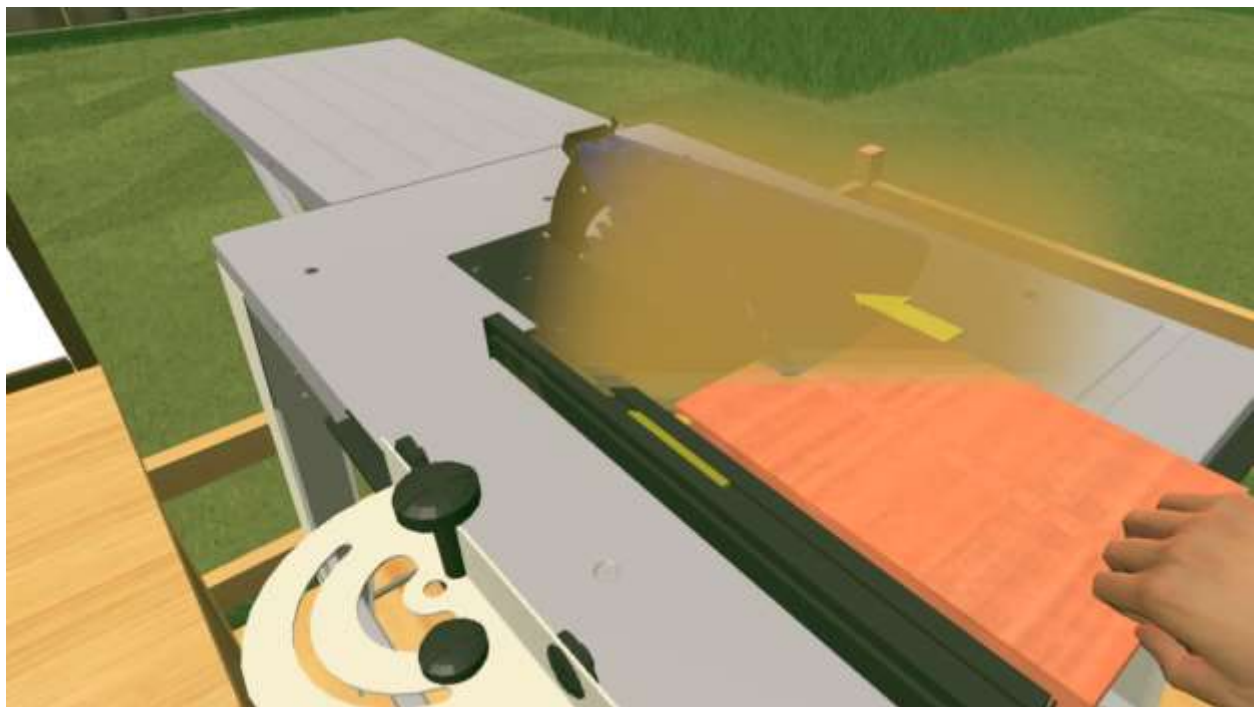
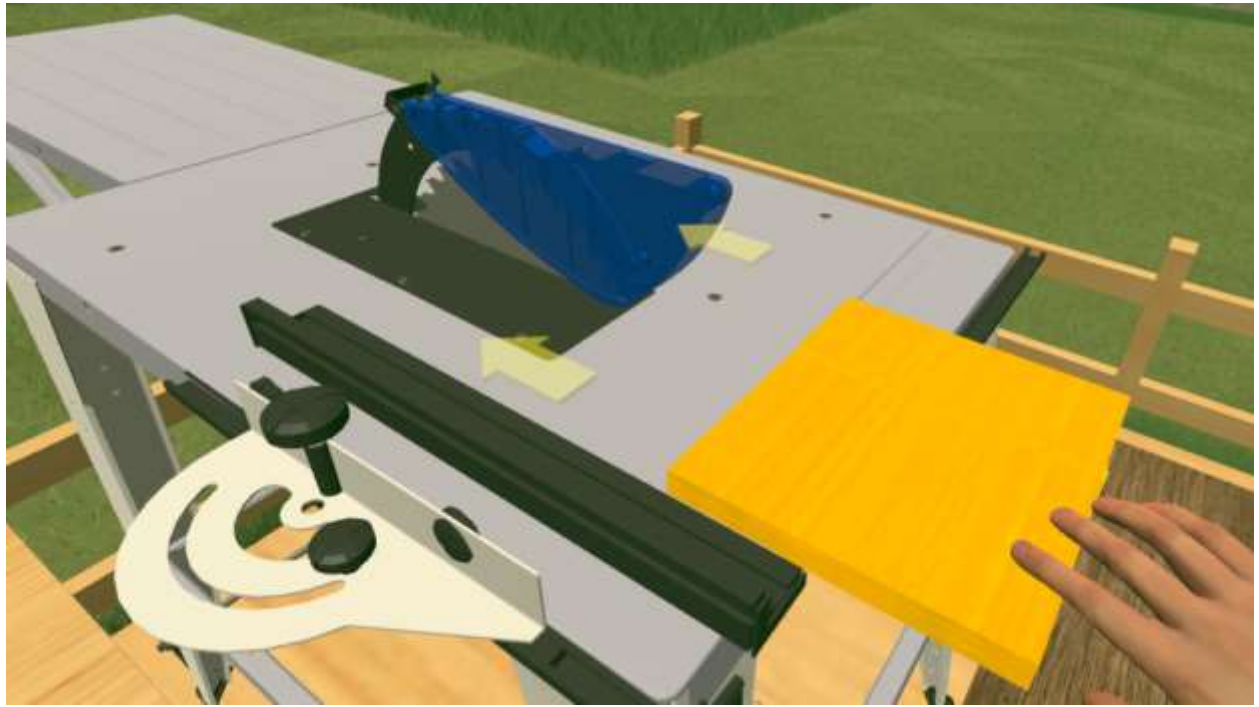


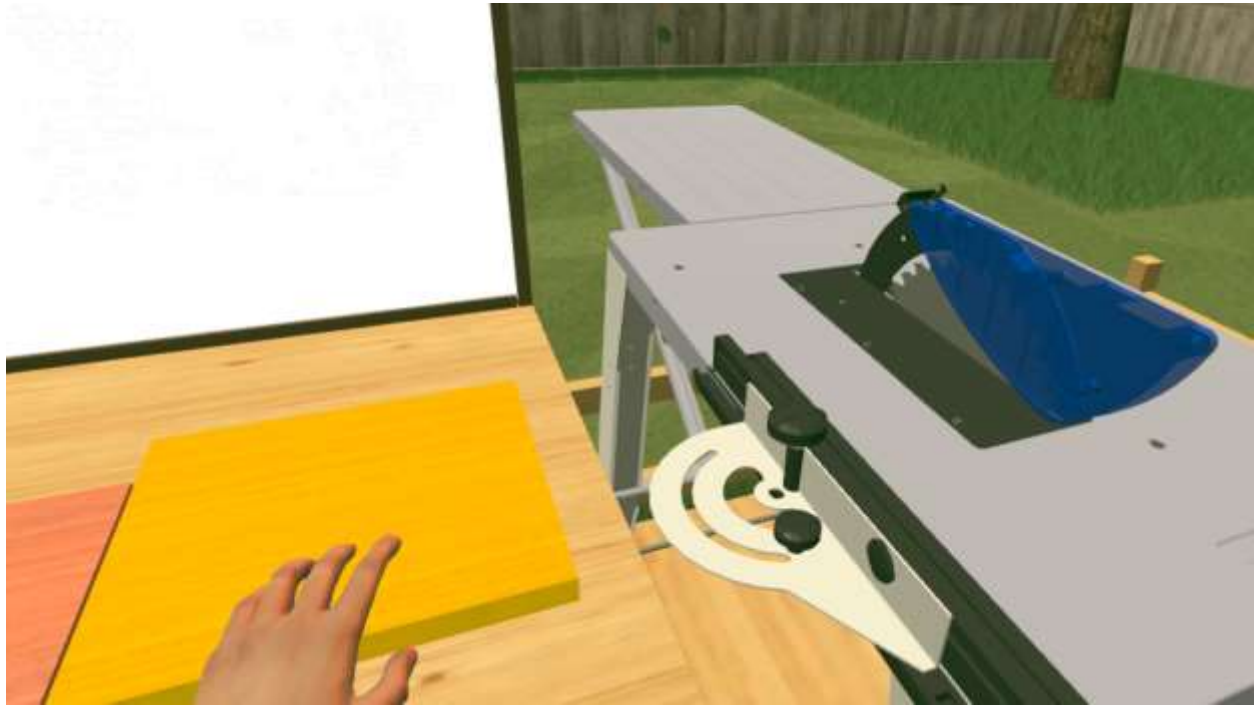


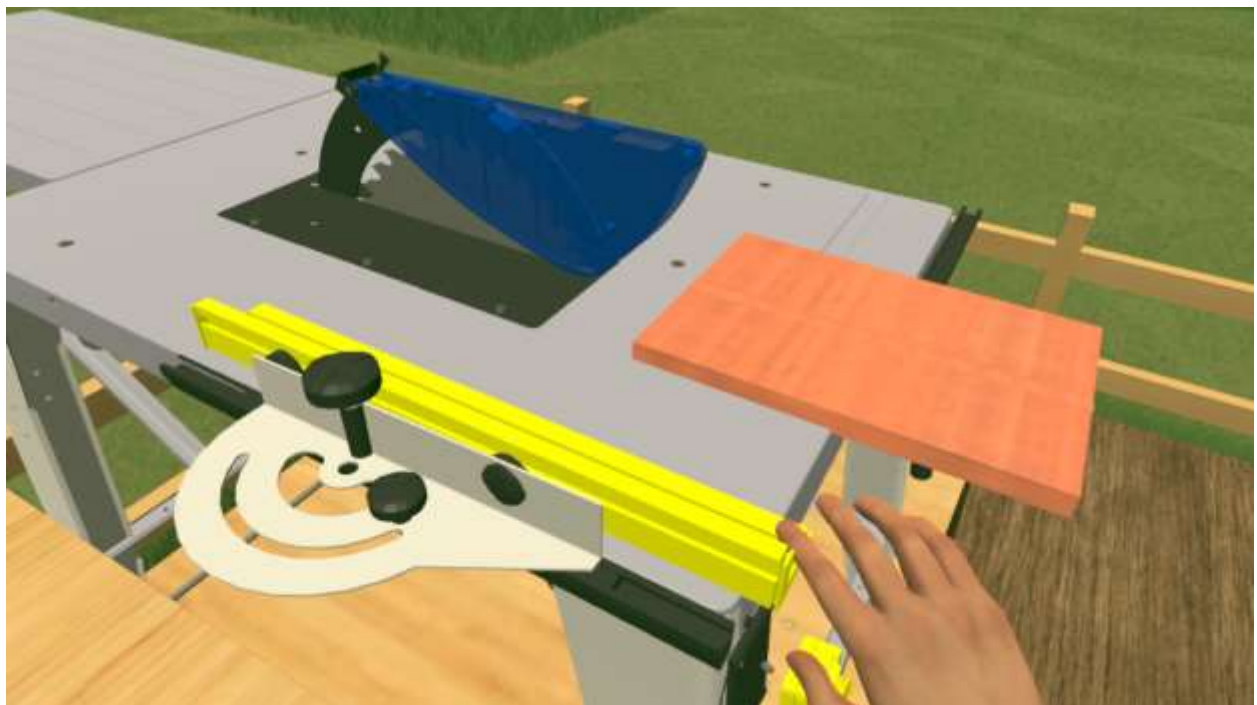






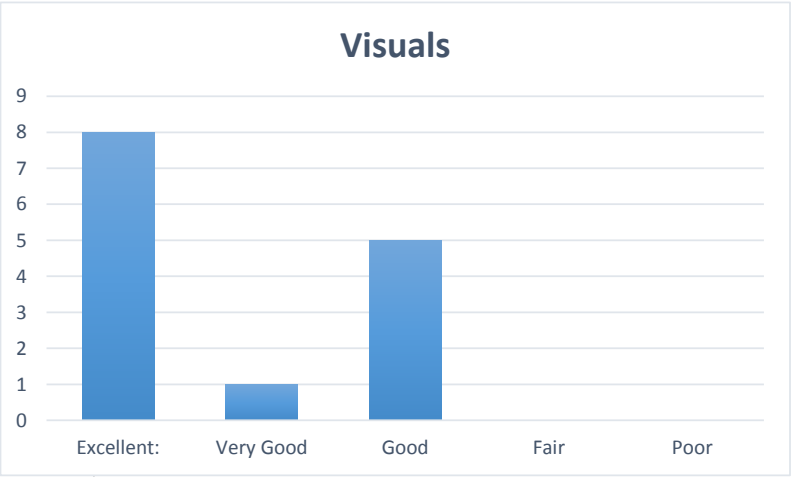






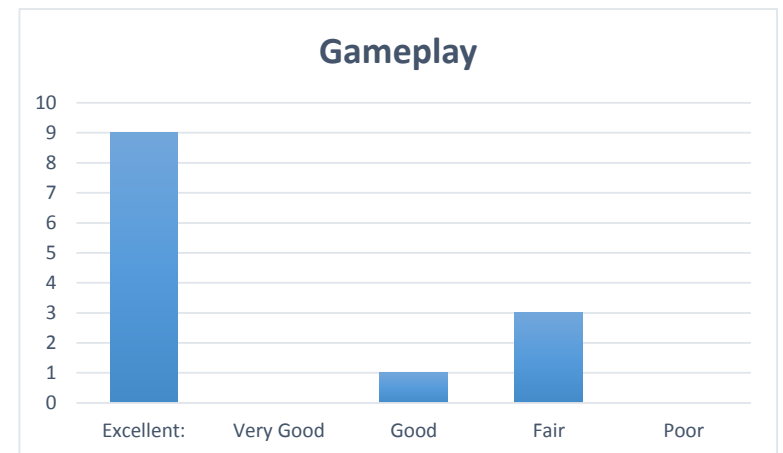


Timestamp	Email Address	How satisfied are you with Power Tools VR based on the criteria below? [Overall Experience]	How satisfied are you with Power Tools VR based on the criteria below? [Visuals]	How satisfied are you with Power Tools VR based on the criteria below? [Length]	How satisfied are you with Power Tools VR based on the criteria below? [Difficulty]
2/26/2019 13:04:29		Good	Good	Good	Very Good
2/26/2019 13:08:37		Very Good	Good	Good	Good
2/26/2019 13:13:18		Very Good	Excellent	Very Good	Very Good
2/26/2019 13:14:21		Fair	Good	Good	Fair
2/26/2019 13:17:25		Excellent	Excellent	Excellent	Excellent
2/26/2019 13:22:35			Good		
2/26/2019 13:24:54		Excellent	Excellent	Excellent	Very Good
2/26/2019 13:29:33		Excellent	Excellent	Excellent	Excellent
2/26/2019 13:30:50		Excellent	Excellent	Excellent	Excellent
2/26/2019 13:31:44		Excellent	Good	Very Good	Very Good
2/26/2019 13:32:45		Excellent	Excellent	Excellent	Excellent
2/26/2019 13:34:19		Excellent	Excellent	Excellent	Excellent
2/26/2019 13:44:54		Excellent	Excellent	Excellent	Excellent
2/26/2019 14:20:27		Excellent	Very Good	Good	Fair

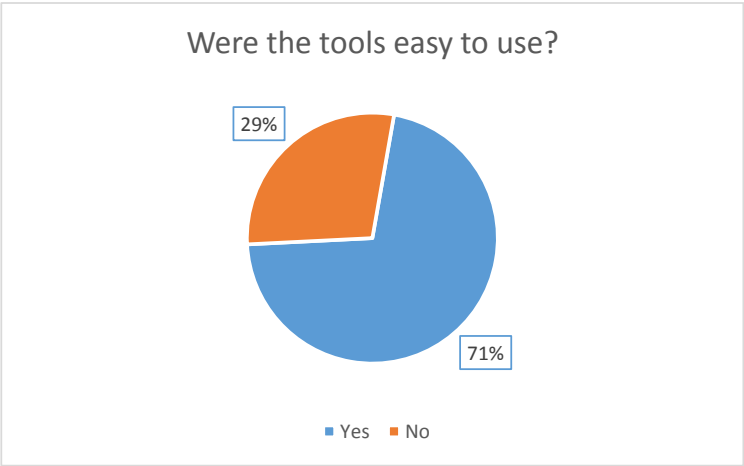


Power Tools VR Feedback Survey

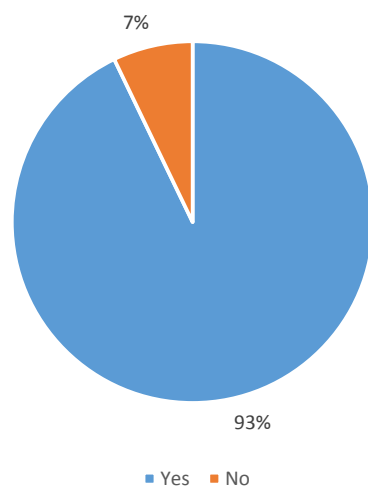
How satisfied are you with Power Tools VR based on the criteria below? [Gameplay]	Which was your favorite tool?	Were the tools easy to use?	Were the instructions on the clipboard clear?	Was the PPE easy to understand and use?	Was there anything you found particularly challenging?
Fair	Only tried 1	No	Yes	Yes	Using the tool
Good		Yes	No	Yes	No
Excellent	Drill	Yes	Some were long instructions	Yes	Couple glitches but otherwise very cool!
Fair	Drill	Yes	Yes	No	
Excellent	Circ saw	Yes	Yes	Yes	
	The saw	No	Yes	Yes	Using the tools the way it was being showed
Excellent	All of them	No	Yes	Yes	The button didn't work
Excellent	Me	Yes	Yes	Yes	No
Excellent	U	Yes	Yes	Yes	Nope
Excellent	Nailer	Yes	Yes	Yes	No
Excellent	The regular drill	Yes	Yes	Yes	Nope
Excellent	Hammer drill	No	Yes	Yes	Picking up the drill
Excellent	Gun	Yes	Yes	Yes	Drilling the gun
Fair	Nail gun	Yes	Yes	Yes	No



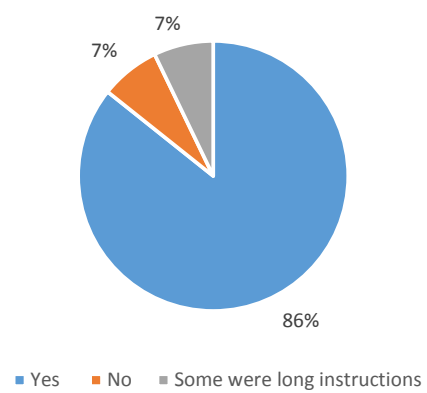
Did you understand the objective and if so what is the objective of the game?	Is there something you wish you could have done but couldn't?	Overall what did you like about Power Tools VR?	Overall what did you dislike about Power Tools VR?
Education	No	Needs more enhancing	Learning curve
Yes	No	Different	Nothing
Yes, to practice the safe operation of tools		Engaging way to try new tools	
Tool awareness		Good visuals	
I do understand, to teach user the proper us of tools	No	The experience	Visuals
Yes, to cut the material	No	Kinda epic	Nothing
Yes	No	Everything	Nothing
Yep	Kinda	All of it	Nothing
Yes	No	How easy	None
Do the safety tasks required for the trades	Nope	Everything	Nothing
No	Picked the drill up	It was deadly	
To learn how to use the tools and perform a task with them.	No	How easy it was to use the tools	The tasks could have been more complex and challenging.



Was the PPE easy to understand and use?



Were the instructions on the clipboard clear?





Feb 26th 2019: Students, employers, educators, safety representatives, Apprenticeship, consultants, safety associations and Safe Work were on hand to try out the new resources. (47 in attendance)



